United States
Environmental Protection
Agency

Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6)
-
Contaminant Information Sheets

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Abbreviations and Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
CalEPA	California Environmental Protection Agency
CASRN	Chemical Abstract Services Registry Number
CCL	Contaminant Candidate List
CCL 1	EPA's First Contaminant Candidate List
CCL 2	EPA's Second Contaminant Candidate List
CCL 3	EPA's Third Contaminant Candidate List
CCL 4	EPA's Fourth Contaminant Candidate List
CCL 5	EPA's Fifth Contaminant Candidate List
CCL 6	EPA's Sixth Contaminant Candidate List
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIS	Contaminant Information Sheet
CSF	Cancer Slope Factor
DSSTox	Distributed Structure-Searchable Toxicity Public Database Network
DTXSID	Distributed Structure-Searchable Toxicity Substance Identifier
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
ECHA	European Food Safety Authority
EDWC	Estimated drinking water concentrations
fHQ	Final Hazard Quotient
HC	Health Canada
HRL	Health Reference Level
IOM	Institute of Medicine
KH	Henry's Law Constant
Koc	Organic Carbon-Water Partition Coefficient
Kow	Octanol-Water Partition Coefficient
LOAEL	Lowest Observed Adverse Effect Level
MDH	Minnesota Department of Health
MRL	Minimum Reporting Level
NIRS	National Inorganics and Radionuclides Survey
NPDWR	National Primary Drinking Water Regulation
NHANES	National Health and Nutrition Examination Survey
NOAEL	No Observed Adverse Effect Level
OPP	Office of Pesticide Programs
OW	Office of Water
PWS	Public Water System
PCCL	Preliminary Contaminant Candidate List
QSAR	Quantitative Structure-activity Relationship
RD	Regulatory Determination
SDWA	Safe Drinking Water Act
SL	Screening Level
UCM	Unregulated Contaminant Monitoring
UCMR	Unregulated Contaminant Monitoring Rule
USEPA	United States Environmental Protection Agency
WHO	World Health Organization

Chapter 1: Introduction

Section 1412(b)(1)(B)(i) of the Safe Drinking Water Act (SDWA), as amended in 1996, requires the United States Environmental Protection Agency (EPA) to publish every five years a list of drinking water contaminants which are not subject to any proposed or promulgated National Primary Drinking Water Regulations (NPDWRs), are known or anticipated to occur in public water systems (PWSs), and may require regulation under the SDWA. This list is known as the Contaminant Candidate List, or CCL. The SDWA directs the agency to consider health effects and occurrence information for unregulated contaminants to identify those that present the greatest public health concern related to exposure from drinking water. The EPA uses this list of unregulated contaminants to help identify priority contaminants for regulatory decision making and to prioritize research and data collection efforts.

The EPA followed a 3-step process to identify chemicals for inclusion on the draft CCL 6. These steps included:

Step 1. Build a broad universe of potential drinking water contaminants (called the CCL 6 Chemical Universe). The EPA evaluated 121 potential new data sources and identified 18 that were related to potential drinking water chemical contaminants and met established CCL assessment factors. From these new data sources and 43 existing data sources used during CCL 5, the EPA identified and extracted occurrence and health effects data for the approximately 25,000 chemicals that comprise the CCL 6 Universe of chemicals.

Step 2. Screen the CCL 6 Chemical Universe to identify the list of chemicals that should be further evaluated, resulting in the Preliminary CCL 6 (PCCL 6). The EPA applied a data-driven screening points system to identify and prioritize a subset of chemicals with the greatest potential for public health concern. The agency also incorporated publicly nominated chemicals to the PCCL 6.

Step 3. Classification of PCCL 6 chemicals to select the draft CCL 6 chemicals. The EPA compiled occurrence and health effects information and imported it into a standardized document format, called the Contaminant Information Sheet (CIS). The agency provided the CISs to two evaluation teams of EPA scientists. The evaluation teams reviewed this information for each chemical before reaching a group decision on whether to recommend a chemical for listing on the draft CCL 6. The EPA then reviewed these recommendations and made refinements to the list based on the history of each contaminant under the SDWA regulatory determination process.

A more detailed description of the processes used to develop the draft CCL 6 of chemicals using these steps can be found in the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026).

The purpose of this document is to present the CISs and relevant information that helps readers understand the data provided in the CISs. The remainder of this document is organized as follows: Chapter 2 presents an overview of the draft CCL 6 CISs; Chapter 3 provides a graphic illustration, also known as the CIS Key, to assist with interpretation of the data on the CIS.

Appendix A provides CISs for 213 PCCL 6 chemicals evaluated by the evaluation teams; and Appendix B provides the references for bracketed citations on the CISs. The remaining references for data sources on the CISs are included in Appendix M of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026).

Chapter 2: Overview of the Draft CCL 6 CISs

This chapter presents an overview of the CISs with a brief description of the data elements presented and how they were used in the CCL 6 process. The CIS for each chemical is a concise, four-page profile that was provided to the chemical evaluators to assist them in making listing recommendations for the draft CCL 6. For select contaminants that have synonyms or other forms but that use the same DTXSID, additional data was added for completeness and transparency.

The first page of each CIS includes a summary of the chemical's attribute scores, final hazard quotient (fHQ), health effects and occurrence information used to calculate the fHQ, chemical use information, and the chemical's status on the CCL. The second and third pages include detailed health effects and occurrence data, respectively. The derivation and use of these data are explained in detail in the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026). The fourth page lists the references that are cited in the CISs.

Page 1 - Summary and Decision

The first page of each chemical CIS contains six sections of information including contaminant identifiers and use characteristics, the draft CCL 6 listing decision and fHQ, attribute scores, health effects and occurrence information, and the status of the contaminant with respect to nomination for the CCL 6 and decisions from previous CCL and regulatory determination cycles. From left to right, the six sections are described as follows:

1) **Contaminant Identification** – presents the contaminant name, a unique DSSTox Substance Identifier (DTXSID), the contaminant's Chemical Abstract Services Registry Number (CASRN), use information, synonyms or other contaminant forms, and other notes. The DTXSID field also contains a hyperlink to the chemical's profile on the EPA's CompTox Chemicals Dashboard. A second table indicates if the contaminant is on any health or occurrence-related lists (i.e., FIFRA and CERCLA lists, or is a known human neurotoxicant).
2) **Contaminant Summary and Decision** – indicates whether the contaminant was listed on the draft CCL 6 and presents the chemical's fHQ (concentration in water divided by the health concentration).
3) **Contaminant Status** – indicates the status of the contaminant with respect to public nomination for the draft CCL 6, previous listings on CCLs 1-5, and previous negative regulatory determinations and the basis for that determination, if applicable.
4) **Attribute Scores –** presents assigned values/categories for each of the four CCL attributes derived from the health effects and occurrence data presented on the CISs, which are defined as follows:
    a. **Potency** quantifies the potential for a chemical to cause adverse health effects based on the dose required to elicit the most sensitive critical effect as identified

in a single study or assessment. Potency for chemicals is reflected in several standard toxicological parameters, including reference dose (RfD) or its equivalent, cancer slope factor (CSF) or its equivalent, no observed adverse effect level (NOAEL), or lowest observed adverse effect level (LOAEL).

b. **Severity** is a descriptive measure of the adverse health effect associated with the toxicity value that is used as the measure of potency and corresponds with the type of adverse outcome expected to occur at the LOAEL of a chemical.

c. **Prevalence** provides a measure of how widespread the occurrence of the chemical is in the environment in the United States. The data used to develop the prevalence score may include the percent of PWSs or monitoring sites with detections of the contaminant, the number of states where pesticides are applied, the number of states reporting the chemical's releases to the environment, or the chemical's production volume in pounds per year (lbs/year).

d. **Magnitude** refers to the quantity of a chemical that is or may be in the environment. This was measured using the median concentration of detections (if available) in drinking water or ambient water, application of the chemical as a pesticide in pounds, or the total pounds of a chemical released to the environment. In cases where magnitude data are not available, persistence and mobility data (i.e., chemical property/environmental fate parameters) were used as surrogates for water occurrence or release data (see USEPA, 2026 for discussion). If a median was not available, the maximum concentration was used.

5) **Health Effects Information** – presents the health effects information used to calculate the fHQ. If available, a health concentration (i.e., health reference level (HRL) or CCL Screening Level (CCL SL)) was calculated from information provided by the cited assessment source. Health concentrations are non-regulatory health-based toxicity values that represent concentrations of a chemical in drinking water in which human exposure, at or below, over a lifetime is unlikely to result in adverse health effects. Health concentrations can be calculated for non-cancer and cancer endpoints and various target populations. The critical effect and target population fromthe selected assessment are also presented in this section.

Health concentrations are expressed as a concentration of a chemical in drinking water (expressed in µg/L). To determine the health concentration for a chemical, the agency considered adverse health effects that may pose a greater risk to specific life stages and other sensitive groups which represent a meaningful portion of the population. Although an HRL or CCL SL was calculated for every qualifying or non-qualifying data element presented on the health effects page, a single health concentration was chosen to calculate the fHQ that is presented on the Summary and Decision page. More details on this process are provided in Section 4.3.1 of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026). The assessment used as the source of

the health concentrations is the same assessment used as the source of the potency and severity attribute scores. This assessment is highlighted in yellow on the health effects page.

6) **Occurrence Information** – presents occurrence data used to calculate the fHQ - the 90th percentile concentration occurrence value, if available, or the next highest percentile value or the maximum concentration of detections (expressed in µg/L). This section also indicates the data source, the type of water source monitored (e.g., finished or ambient water), and the monitoring date range. If measured data were unavailable, modeled concentrations were used. A description of the selection process for the water concentration used to calculate the fHQ is provided in Section 4.3.2 and Appendix G of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026).

Page 2 - Health Effects Data

The second page of the CISs presents the available health effects data for each chemical. The page is split into three distinct sections:

1. **Qualifying and Non-Qualifying Health Effects Data** – presents data elements extracted from qualifying health assessments, followed by data elements extracted from non-qualifying health assessments. Differences between these two types of assessments are described in Section 4.3.1 of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026). The column headings indicate the data element, the numerical or qualitative value, associated units, and assessment source and year associated with the data element. Typically, the year is the date of publication of the data, although given the variability of the formatting of the data sources, it may represent a toxicological study date or the date when the data source website was last updated or accessed. If available, the critical study and effect are noted alongside the target population and exposure factor used to derive the HRL or CCL SL; a reference to the full citation is provided on page 4 of the CIS. A notes field is filled in if other pertinent information for a particular data element or a specific data source is available. The row for the data element used to develop the potency and severity attribute scores and to calculate the fHQ is shaded yellow.

2. **Literature Search Summary** – summarizes results from the rapid systematic review conducted for relevant health effects information, as further described in Section 4.2.2 of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026). Search start and end dates, based on the date of the most recent published health assessment for the chemical of interest, are listed. The number of unique references identified for each chemical and deemed relevant after title-abstract screening and full-text review is also provided. If available, lowest LOAEL and highest NOAEL health effects information from animal toxicity studies are presented with the corresponding study references. Additional supplementary materials and rapid systematic review results for each chemical are

accessible via the CCL 6 docket (EPA-HQ-OW-2022-0946).

3. **Other Health Data** – presents other supporting qualitative and quantitative data at the bottom of the health effects data page of the CIS. These data represent measured and modeled health effects information collected from main data sources and the CompTox Chemicals Dashboard. Examples include cancer classifications from non-EPA sources, toxicity or benchmark values for multiple exposure durations (e.g., acute) and routes (e.g., inhalation), and quantitative structure-activity relationship (QSAR) results. Data that were modeled are provided in a separate table from the measured data.

Page 3 - Occurrence Data

The third page of the CISs provides the available occurrence data for each chemical. Data used to develop the occurrence attribute scores, also known as "scoring data", are presented at the top of the page, followed by "non-scoring data". The page is split into six distinct sections:

1. **Nationally Representative Water Data –** nationally representative finished drinking water data provide the most relevant estimate of human exposure to a contaminant via drinking water; therefore, they are listed first in this section, followed by ambient water data. The column headers for the water data include the data source; number of total PWSs, sampling sites, or samples; number of positive results (referred to as "detects"); an indication as to whether these values correspond to PWSs, sampling sites, or samples; percent of PWSs, sites, or samples with detections; and where available, minimum, median, 90th percentile, and maximum concentration values; units; sampling year(s); and a notes field. The row with the occurrence data element used to develop the prevalence and magnitude attribute scores is shaded yellow on the CIS.

2. **Application, Release, and Production Data** – if water monitoring data were not available, then application, release, and production data were used to develop attribute scores and to serve as an indicator of the potential likelihood of a chemical occurring in water. These surrogate occurrence data include pesticide application data, toxic release data, and chemical production data, all measured in pounds per year, for the most recent year for which data were available at the time of CCL 6 data collection. In addition, the pesticide application and toxic release data provide counts for how many states a chemical was applied or released in the data collection year, which can also be used as an indicator of the potential for a chemical to occur in water.

3. **Non-Nationally Representative Water Data –** non-nationally representative water data are presented in the following order, from most relevant indicator of occurrence in drinking water to a less certain predictor: finished drinking water data, ambient water data, and wastewater effluent data. These data were not used to develop attribute scores since they are not nationally representative; therefore, they are listed as "non-scoring data". This section includes data from both main and supplemental data sources. Similar to the Nationally Representative Water Data section, the data in

this section includes column headers for the water occurrence data, including the data source, number of total PWSs, sampling sites, samples, number of detections, number of PWSs, sampling sites, or samples, percent of detections, and where available, minimum, median, 90th percentile, and maximum concentration values; units, sampling year(s), and a notes field.

4. **Estimated Concentration in Water** – estimated occurrence concentrations for pesticides that lacked nationally representative finished and/or nationally representative ambient water data. The presented modeled occurrence pesticide concentrations are sourced from the EPA's Office of Pesticide Programs (OPP) risk assessments. This section provides modeled concentrations, known as estimated drinking water concentrations (EDWCs), accompanied by information on the assessment source, publication date, model used, and any other relevant notes. A description of the estimated occurrence concentrations used in CCL 6 is provided in Section 4.2.1.2 of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026).

5. **Predicted Exposure and Biomonitoring Data** – predicted exposure data from the EPA CompTox Dashboard provide results from qualitative structure-activity relationship (QSAR) and ExpoCast models that have been developed to predict chemical identifications such as toxicity endpoints, physical properties, exposure and environmental fate parameters. This information is presented in addition to the biomonitoring data collected by CDC's National Health and Nutrition Examination Survey (NHANES), which provides data for detections at the 90th percentile in human tissues and fluids such as serum, blood, and urine. This information is included because the data may suggest there is exposure in the U.S. population, there are serious known or suspected health effects associated with different levels of exposure, and there may be limited availability and adequacy of analytical methods and other logistical and cost considerations that resulted in limited finished or ambient water data.

6. **Modeled Environmental Fate Parameters** – includes any available data on environmental fate parameters. These modeled parameters from the EPA CompTox Dashboard provide measures of a chemical's persistence and mobility in the environment. These measures include half-life ($t_{1/2}$), boiling point, vapor pressure, solubility in water, bioconcentration factor, Henry's Law constant (K_H), organic carbon-water partition coefficient (Koc); and octanol-water partition coefficient (Kow).

Page 4 - References

The fourth page presents the references for the bracketed citations on the first three pages. References for all main data sources are provided in Appendix M of the Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants (USEPA, 2026).

Chapter 3: CIS Key

The following four pages provide an annotated graphic illustration, known as the CIS Key, to assist with interpretation of the data on the CIS.

References

USEPA. 2026. Technical Support Document for the Draft Sixth Contaminant Candidate List (CCL 6) - Chemical Contaminants. EPA 815-R-26-004. February 2026.

Contaminant Identification: Presents the contaminant name, DSSTox Substance ID (DTXSID) and Chemical Abstract Services Registry Number (CASRN), use, notes, and its status on health or occurrence related lists.

Contaminant Summary and Decision: Indicates the contaminant's status on the Draft CCL 6 and presents the final hazard quotient (concentration in water divided by the Health Reference Level (HRL) or CCL Screening Level (SL)).

Contaminant Status: Indicates if the contaminant was publicly nominated for CCL 6, its status on previous CCL cycles, and past negative regulatory determinations and the basis for that determination. If the contaminant does not have a negative regulatory determination, "Not Applicable" is recorded.

Propiconazole
CCL 6 Contaminant Information Sheet

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propiconazole
CASRN:	60207-90-1
DTXSID:	DTXSID8024280
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000036

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1100	Based on liver lesions (vacuolation of hepatocytes in males, ballooned cells in the liver of males, and foci of enlarged hepatocytes in females), increased incidence of luminal dilation of the uterus in females, and reduced body weights in both males and females.	general population	OPP 2022

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0398	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level (SL).

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration, exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Attribute Scores: Presents assigned values/categories for each of the four CCL attributes derived from the health effects and occurrence data presented on the CISs. Attribute scores allow EPA to compare relative toxicity and occurrence of CCL 6 chemicals.

Occurrence information: Presents occurrence data used to calculate the final hazard quotient - the 90th percentile concentration occurrence value, if available, or the next highest percentile value or the maximum concentration of detections. If measured data were unavailable, modeled concentrations were used. Also, indicates water type, data source, and monitoring date(s).

Health Effects Information: Presents data elements used to calculate the final hazard quotient, including the Health Reference Level (HRL) or CCL Screening Level (SL), the assessment from which the HRL or CCL SL was derived, and the corresponding critical effect and target population. The assessment listed here was also used as a source for the potency and severity attribute scores.

Qualifying and Non-Qualifying Health Effects Data: Presents data elements from qualifying health assessments first, followed by those from non-qualifying health assessments. The column headings summarize the data element, the numerical value (or qualitative, for cancer classifications), units and assessment source and year associated with the data element. If available, the critical study and effect are noted along with the target population, exposure factor, HRL or CCL SL, and a reference to the full citation on the references page. A notes field is filled in if other pertinent information for a particular data element is available.

Yellow shading indicates the data used to populate the potency and severity attribute scores, health effects information, and final hazard quotient sections on the Summary + Decision page.

Propiconazole
CCL 6 Contaminant Information She

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factor

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.18	mg/kg/day	OPP 2022	MRID 00129918	Based on liver lesions (vacuolation of hepatocytes in males, ballooned cells in the liver of males, and foci of enlarged hepatocytes in females), increased incidence of luminal dilation of the uterus in females, and reduced body weights in both males and females.	general population	0.0338	1100	[125]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information (OPP 2022) has been published since that time and has been used to derive an updated HRL for propiconazole.
Cancer Classification (CC)	C		OPP 2022						[125]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study

Literature Search Summary: Summarizes the rapid systematic review results for relevant health effects information. If available, the lowest LOAEL and highest NOAEL health effects information from animal toxicology studies are presented with references. Search date ranges based on the publication date of the most recent health assessment are listed. The numbers of unique references identified and deemed relevant after title-abstract screen and full-text review are also provided.

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	2	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.3	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For propiconazole
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For cis-propiconazole
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For trans-propiconazole

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

LD50	1517	mg/kg	NIH HSDB	max
LOAEL	8.4	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.9	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	31	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	461.73	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	6.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	461.73	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00405509	mol/kg	TEST QSAR	
Ames mutagenicity test	0.333	no units	TEST QSAR	
Developmental toxin test	0.484	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Other Health Data: Presents supporting qualitative and quantitative health effects data. These data represent measured and modeled health effects information collected from primary data sources and the CompTox Chemicals Dashboard. Modeled data is provided in a separate table from measured data.

Nationally Representative Water Data: Scoring data presented in order of the hierarchical attribute scoring protocol established for prevalence and magnitude. Finished water data from the most recent UCMR cycle are shown first, followed by the preceding UCMR cycles, then NIRS and finally UCM. Lastly, national ambient water data from NAWQA are presented.

Yellow shading indicates the data used to calculate the prevalence and magnitude attribute scores on the Summary + Decision page.

Propiconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data		Samples				Conc. (Detects)		90th Percentile (Detects)	Maxim (De	
Finished Water			Prevalence					Magnitude		
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024									
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020									
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015									
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010									
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003									
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986									
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997									
Unregulated Contaminant Monitoring-State (UCM-State) Round 1										
Ambient Water								Magnitude		
National Water Quality Assessment (USGS NAWQA) (Ambient)						0.00035	0.0095	0.0398	1.72	

Application, Release, and Production Data: Additional scoring data for Prevalence and Magnitude used to estimate potential occurrence in water in the absence of measured water data. They include application rate data for pesticides, toxic release data, and chemical production data.

Pesticide Application Data	Numb	Number of States	Amount Released (lbs/year)
Estimated Annual Agricultural Pesticide Use (USGS)		7	27,035

Chemical Produc
Results (EPA) (2018)

Non-Nationally Representative Water Data: Non-scoring data from primary and supplemental sources that are presented in order of hierarchy, separated into three categories: finished water data, ambient water data, and waste water effluent data.

Non-Scoring Data

Non-Nationally Representative Water Data						Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	
Finished Water			Prevalence					Magnitude		
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	2	0.086	0.086	0.086	0.086	ug/L
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.0057	0.0057	0.012	0.029	ug/L
Bradley et al. 2018 (Finished) [41]	2016	26	2	Sites	8	0.0141	0.0154	0.0165	0.0168	ug/L
Ambient Water			Prevalence					Magnitude		
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,856	356	Sites	7	3e-04	0.0114	0.104	3.72	ug/L
USDA Pesticide Data Program (PDP) (Groundwater)						0566	0.0057	0.134	0.192	ug/L
USDA Pesticide Data Program (PDP) (Untreated)						0057	0.01	0.0195	0.07	ug/L
Surface Water Database (SURF) California Dept. of Pe						.02	0.0343	0.182	3.37	ug/L
Bradley et al. 2017 (Ambient) [40]						0202	0.0644	0.271	0.405	ug/L
Arnold et al. 2016 (Filtered) [2]						0023	0.00845	0.0225		
USGS, McKenzie River, Oregon, (Ambient) [129]										
Masoner et al. 2019 (Urban Stor ater) (Ambient) [						0181	0.0858	0.123		
Waste Water Effluent										

Estimated Concentration in Water: Pesticide modelled concentrations used in instances when no finished or ambient water data were available. The modelled value and units are included in this section, accompanied by information on the source, publication date, model used, and relevant notes.

Estimated Concentration in Water	Date	Source	Value	Units	Model

Modeled Environmental Fate Parameters: Available environmental fate parameters for a chemical extracted from EPA's CompTox Dashboard. For persistence, this includes the chemical's half-life. The remaining properties relate to a chemical's mobility in the environment.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000133	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection			
NHANES biomonitoring detection			
NHANES biomonitoring detection			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source		
Biodegradation half-life	OPERA QSAR		
Boiling point	OPERA QSAR	350.142	degree C
Boiling point	TEST QSAR	366.386	degree C
	OPERA QSAR	0.00000042	mmHg
	TEST QSAR	7.08E-08	mmHg
	OPERA QSAR	121624.3036	µg/L
	TEST QSAR	65811.98598	µg/L
	OPERA QSAR	45.7486	no units
	TEST QSAR	102.094	no units
oc)	OPERA QSAR	2451.91	L/kg
ow)	OPERA QSAR	3.71704	no units
	OPERA QSAR	0.00000383	atm-m3/mol

Notes: Highli a indicate va
Blank fields indi there were no
"All Water" data m NWIS and N
Monitoring date r non-scoring
State Drinking W Monitoring P

Predicted Exposure and Biomonitoring Data: Predicted daily exposure (ExpoCast) data extracted from EPA's CompTox Dashboard are presented above biomonitoring data from the National Health and Nutrition Examination Survey (NHANES) Biospecimen Program. Biomonitoring values presented are the 90th percentile concentrations of compounds in serum, blood and/or urine.

Propiconazole
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
40	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
41	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
102	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
125	OPP. 2022. Propiconazole: Revised Human Health Draft Risk Assessment of the Conventional Uses to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D464253
129	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
416	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

References: This page presents the full references for the bracketed citations on the CISs.

Appendix A – Contaminant Information Sheets

This appendix contains CISs for the 213 PCCL 6 chemicals reviewed by the EPA's evaluation teams for the CCL 6. These chemicals are listed in a table in the alphabetic order that their CISs are shown in this document. The CISs present all data currently available at the time of the evaluations process in a tabular format, containing relevant information pertaining to their background, health effects, and occurrence. Due to the technical limitations of this section, for further assistance with reasonable accommodation please contact Thomas Lombardi at lombardi.thomas@epa.gov or 202-564-7653.

Chemical Name	CASRN	DTXSID
1,1,2,2-Tetrachloroethane	79-34-5	DTXSID7021318
1,1-Dichloroethane	74-34-3	DTXSID1020437
1,2,3-Trichloropropane	96-18-4	DTXSID9021390
1,2,4-Triazole	288-88-0	DTXSID6027131
1,2,4-Trimethylbenzene	95-63-6	DTXSID6021402
1,2-Diphenylhydrazine	122-66-7	DTXSID7020710
1,3-Butadiene	106-99-0	DTXSID3020203
1,3-Dichloropropene	542-75-6	DTXSID1022057
1,4-Dioxane	123-91-1	DTXSID4020533
1-Methylnaphthalene	90-12-0	DTXSID9020877
2,4,6-Trinitrotoluene	118-96-7	DTXSID7024372
2,4-Dichlorophenoxybutyric acid	94-82-6	DTXSID7024035
2,4-Dichlorophenol	120-83-2	DTXSID1020439
2,4-Dinitrotoluene	121-14-2	DTXSID0020529
2,6-Dinitrotoluene	606-20-2	DTXSID5020528
2-Chloro-4,6-diamino-1,3,5-triazine	3397-62-4	DTXSID1037806
2-Hydroxyatrazine	2163-68-0	DTXSID6037807
2-Methylnaphthalene	91-57-6	DTXSID4020878
4-tert-Octylphenol	140-66-9	DTXSID9022360
5-Methyl-1H-benzotriazole	136-85-6	DTXSID1038743
6-Acetyl-1,1,2,4,4,7-hexamethyltetralin	21145-77-7	DTXSID7041544
Acephate	30560-19-1	DTXSID8023846
Acetamiprid	135410-20-7	DTXSID0034300
Acetochlor	34256-82-1	DTXSID8023848
Acetochlor ESA	187022-11-3	DTXSID6037483
Acetochlor OA	194992-44-4	DTXSID1037484
Acetone	67-64-1	DTXSID8021482
Acrylonitrile	107-13-1	DTXSID5020029
Alachlor ESA	142363-53-9	DTXSID6037485
Alachlor OA	171262-17-2	DTXSID1037486

Chemical Name	CASRN	DTXSID
Aldrin	309-00-2	DTXSID8020040
alpha-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	DTXSID2020684
Aluminum	7429-90-5	DTXSID3040273
Ametryn	834-12-8	DTXSID1023869
Ammonia	7664-41-7	DTXSID0023872
Anthraquinone	84-65-1	DTXSID3020095
Argon	7440-37-1	DTXSID3052482
Azoxystrobin	131860-33-8	DTXSID0032520
Benfluralin	1861-40-1	DTXSID3023899
Bensulide	741-58-2	DTXSID9032329
Bentazone	25057-89-0	DTXSID0023901
Benzophenone	119-61-9	DTXSID0021961
Benzyl butyl phthalate	85-68-7	DTXSID3020205
Bicarbonate	71-52-3	DTXSID2049921
Bifenthrin	82657-04-3	DTXSID9020160
Bisphenol A	80-05-7	DTXSID7020182
Boron	7440-42-8	DTXSID3023922
Boscalid	188425-85-6	DTXSID6034392
Bromacil	314-40-9	DTXSID4022020
Bromide	7726-95-6	DTXSID6043967
Bromochloromethane	74-97-5	DTXSID4021503
Bromoxynil	1689-84-5	DTXSID3022162
Caffeine	58-08-2	DTXSID0020232
Calcium	7440-70-2	DTXSID9050484
Carbaryl	63-25-2	DTXSID9020247
Carbendazim	10605-21-7	DTXSID4024729
Carbon	7440-44-0	DTXSID9027651
Carbon dioxide	124-38-9	DTXSID4027028
Carbon disulfide	75-15-0	DTXSID6023947
Chlorimuron-ethyl	90982-32-4	DTXSID0023955
Chlordecone (Kepone)	143-50-0	DTXSID1020770
Chlorodifluoromethane	75-45-6	DTXSID6020301
Chloromethane	74-87-3	DTXSID0021541
Chlorothalonil	1897-45-6	DTXSID0020319
Chlorpyrifos	2921-88-2	DTXSID4020458
Chlorsulfuron	64902-72-3	DTXSID7023980
Clopyralid	1702-17-6	DTXSID9029221
Clothianidin	210880-92-5	DTXSID2034465
Cobalt	7440-48-4	DTXSID1031040

Chemical Name	CASRN	DTXSID
Coumaphos	56-72-4	DTXSID2020347
Cyfluthrin	68359-37-5	DTXSID5035957
Cyhalothrin	68085-85-8	DTXSID6023997
Cypermethrin	52315-07-8	DTXSID1023998
Cyproconazole	94361-06-5	DTXSID0032601
DEET	134-62-3	DTXSID2021995
Deethylatrazine	6190-65-4	DTXSID5037494
Deisopropylatrazine	1007-28-9	DTXSID0037495
Deltamethrin	52918-63-5	DTXSID8020381
Diazinon	333-41-5	DTXSID9020407
Dibutyl phthalate	84-74-2	DTXSID2021781
Dicamba	1918-00-9	DTXSID4024018
Dichlobenil	1194-65-6	DTXSID5032365
Dichlorvos	62-73-7	DTXSID5020449
Dicrotophos	141-66-2	DTXSID9023914
Dieldrin	60-57-1	DTXSID9020453
Diethyl phthalate	84-66-2	DTXSID7021780
Difenoconazole	119446-68-3	DTXSID4032372
Dimethenamid	87674-68-8	DTXSID4032376
Dimethoate	60-51-5	DTXSID7020479
Dinotefuran	165252-70-0	DTXSID7034549
Dithiopyr	97886-45-8	DTXSID9032379
Diuron	330-54-1	DTXSID0020446
Endosulfan sulfate	1031-07-8	DTXSID3037541
Epoxiconazole	133855-98-8	DTXSID1040372
EPTC	759-94-4	DTXSID1024091
Esfenvalerate	66230-04-4	DTXSID4032667
Ethalfluralin	55283-68-6	DTXSID8032386
Ethion	563-12-2	DTXSID2024086
Ethofumesate	26225-79-6	DTXSID8034580
Ethylene thiourea	96-45-7	DTXSID5020601
Fenbuconazole	114369-43-6	DTXSID8032548
Fenitrothion	122-14-5	DTXSID4032613
Fenpropathrin	39515-41-8	DTXSID0024002
Fipronil	120068-37-3	DTXSID4034609
Fludioxonil	131341-86-1	DTXSID2032398
Flufenacet	142459-58-3	DTXSID2032552
Flumetsulam	98967-40-9	DTXSID4032615
Fluometuron	2164-17-2	DTXSID8020628
Fluoranthene	206-44-0	DTXSID3024104

Chemical Name	CASRN	DTXSID
Fluridone	59756-60-4	DTXSID8024107
Fonofos	944-22-9	DTXSID2024113
Galaxolide	1222-05-5	DTXSID8027373
Hexazinone	51235-04-2	DTXSID4024145
Hydramethylnon	67485-29-4	DTXSID6023868
Imazalil	35554-44-0	DTXSID8024151
Imazaquin	81335-37-7	DTXSID3024152
Imazethapyr	81335-77-5	DTXSID3024287
Imidacloprid	138261-41-3	DTXSID5032442
Indoxacarb	173584-44-6	DTXSID1032690
Iodide	7553-56-2	DTXSID80912339
Iprodione	36734-19-7	DTXSID3024154
Iron	7439-89-6	DTXSID5043710
Isophorone	78-59-1	DTXSID8020759
lambda-Cyhalothrin	91465-08-6	DTXSID7032559
Linuron	330-55-2	DTXSID2024163
Lithium	7439-93-2	DTXSID5036761
Magnesium	7439-95-4	DTXSID0049658
Malaoxon	1634-78-2	DTXSID9020790
Malathion	121-75-5	DTXSID4020791
Manganese	7439-96-5	DTXSID2024169
MCPA	94-74-6	DTXSID4024195
Mecoprop	93-65-2	DTXSID9024194
Metalaxyl	57837-19-1	DTXSID6024175
Methane	74-82-8	DTXSID8025545
Methomyl	16752-77-5	DTXSID1022267
Methyl bromide	74-83-9	DTXSID8020832
Methyl mercury	22967-92-6	DTXSID9024198
Methyl tert-butyl ether	1634-04-4	DTXSID3020833
Metolachlor	51218-45-2	DTXSID4022448
Metolachlor ESA	171118-09-5	DTXSID1037567
Metolachlor OA	152019-73-3	DTXSID6037568
Metribuzin	21087-64-9	DTXSID6024204
Metsulfuron-methyl	74223-64-6	DTXSID6023864
Mirex	2385-85-5	DTXSID7020895
Myclobutanil	88671-89-0	DTXSID8024315
Naphthalene	91-20-3	DTXSID8020913
Nicosulfuron	11991-09-4	DTXSID6034764
Nicotine	54-11-5	DTXSID1020930
Nitrobenzene	98-95-3	DTXSID3020964

Chemical Name	CASRN	DTXSID
Nitroglycerin	55-63-0	DTXSID1021407
Nonylphenol	25154-52-3	DTXSID3021857
Norflurazon	27314-13-2	DTXSID8024234
Oryzalin	19044-88-3	DTXSID8024238
Oxadiazon	19666-30-9	DTXSID3024239
Oxyfluorfen	42874-03-3	DTXSID7024241
p-Cresol	106-44-5	DTXSID7021869
Pendimethalin	40487-42-1	DTXSID7024245
Pentachloronitrobenzene	82-68-8	DTXSID2021105
Phenanthrene	85-01-8	DTXSID6024254
Phenol	108-95-2	DTXSID5021124
Phorate	298-02-2	DTXSID4032459
Phosmet	732-11-6	DTXSID5024261
Phosphate/Orthophosphate	14265-44-2	DTXSID7039672
Phosphorus	7723-14-0	DTXSID1024382
Piperonyl butoxide	51-03-6	DTXSID1021166
Potassium	7440-09-7	DTXSID9049748
Prometon	1610-18-0	DTXSID6022341
Prometryn	7287-19-6	DTXSID4024272
Propanil	709-98-8	DTXSID8022111
Propargite	2312-35-8	DTXSID4024276
Propetamphos	31218-83-4	DTXSID7032470
Propiconazole	60207-90-1	DTXSID8024280
Propoxur	114-26-1	DTXSID7021948
Propyzamide	23950-58-5	DTXSID2020420
Prosulfuron	94125-34-5	DTXSID9034868
Pyraclostrobin	175013-18-0	DTXSID7032638
Pyrene	129-00-0	DTXSID3024289
Quinoline	91-22-5	DTXSID1021798
RDX	121-82-4	DTXSID9024142
Silica	7631-86-9	DTXSID1029677
Silicon	7440-21-3	DTXSID0051441
Silver	7440-22-4	DTXSID4024305
Sodium	7440-23-5	DTXSID1049774
Strontium	7440-24-6	DTXSID3024312
Sulfentrazone	122836-35-5	DTXSID6032645
TDCPP	13674-87-8	DTXSID9026261
Tebupirimfos	96182-53-5	DTXSID1032482
Tebuthiuron	34014-18-1	DTXSID3024316
Terbacil	5902-51-2	DTXSID8024317

Chemical Name	CASRN	DTXSID
Terbufos	13071-79-9	DTXSID2022254
Terbuthylazine	5915-41-3	DTXSID4027608
tert-Butyl alcohol	75-65-0	DTXSID8020204
Tetraconazole	112281-77-3	DTXSID8034956
Thiabendazole	148-79-8	DTXSID0021337
Thiamethoxam	153719-23-4	DTXSID2034962
Thiobencarb	28249-77-6	DTXSID6024337
Thiram	137-26-8	DTXSID5021332
Tolyltriazole	29385-43-1	DTXSID0026171
Triadimefon	43121-43-3	DTXSID3023897
Triadimenol	55219-65-3	DTXSID0032493
Tri-allate	2303-17-5	DTXSID5024344
Tributyl phosphate	126-73-8	DTXSID3021986
Triclopyr	55335-06-3	DTXSID0032497
Triclosan	3380-34-5	DTXSID5032498
Trifloxystrobin	141517-21-7	DTXSID4032580
Trifluralin	1582-09-8	DTXSID4021395
Triphenyl phosphate	115-86-6	DTXSID1021952
Tris(2-butoxylethyl) phosphate	78-51-3	DTXSID5021758
Tris(2-chloroethyl) phosphate	115-96-8	DTXSID5021411
Triticonazole	131983-72-7	DTXSID0032655
Tungsten	7440-33-7	DTXSID8052481
Vanadium	7440-62-2	DTXSID2040282
Zinc	7440-66-6	DTXSID7035012

1,1,2,2-Tetrachloroethane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,1,2,2-Tetrachloroethane
CASRN:	79-34-5
DTXSID:	DTXSID7021318
Use:	Industrial solvent; former pesticide; in manufacture of paints, varnish, rust removers; in soil sterilization and weed killer, insecticide formulations; chemical intermediate
Chemical Notes:	Canceled pesticide. Last end of use date: 7/1/1987.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	27

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear mode of action	5	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.1	hepatocellular carcinoma in female mice	general population	IRIS 2010

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.68	90th Percentile	Finished Water	UCM1	1988 - 1992

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on 1,1,2,2-tetrachloroethane in RD 2 (2008). The agency found that an NPDWR did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- The percentage of detections decreased from UCM-State Round 1 to UCM-State Round 2 monitoring
- No detections in subsequent USGS source water surveys
- RD 2 HRL = 0.4 µg/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,1,2,2-Tetrachloroethane
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	IRIS 2010	NTP 2004	increased relative liver weights in rats	general population	0.0338	100	[237]	
Cancer Slope Factor (CSF)	0.2	$(mg/kg/day)^{-1}$	IRIS 2010	NCI 1978	hepatocellular carcinoma in female mice	general population	0.0338	0.1	[237]	
Reference Dose (RfD) or Equivalent	0.0011	mg/kg/day	CALEPA 2003	Schmidt et al. 1972	transient weight gain depression and increased liver fat content	general population	0.0338	6.5	[48]	Note: Estimated health-protective concentration of 1,1,2,2-TCA in drinking water.
Cancer Slope Factor (CSF)	0.15	$(mg/kg/day)^{-1}$	CALEPA 2003	NCI 1978	hepatocellular carcinoma in female mice	general population	0.0338	0.2	[48]	
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OW 2008	NTP 2004	increase in relative liver weight	general population	0.0338	60	[221]	Note: Lifetime health advisory that was later stated to be not recommended to be developed because of cancer classification as likely.
Cancer Slope Factor (CSF)	0.085	$(mg/kg/day)^{-1}$	OW 2008	NCI 1978	hepatocellular carcinomas in female mice	general population	0.0338	0.35	[221]	
Cancer Classification (CC)	L		IRIS 2010						[237]	L = Likely to be carcinogenic to humans
Cancer Classification (CC)	L		OW 2008						[221]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2009	4/7/2020	45	0	1	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	3	mg/l	EPA DWSHA 2018	
Public Health Goal	0.0001	mg/l	CalEPA OEHHA Public Health Goals	
Cancer Slope Factor (CSF)	0.2	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.0002	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.0002	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.000058	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.5	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.0004	mg/l	EPA DWSHA 2018	
Subchronic RfD	0.05	mg/kg/day	EPA IRIS	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	250	mg/kg	NIH HSDB	
LOAEL	284	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	76	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	284	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	76	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	40	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
TD50	1910	mg/kg/day	NIH CPDB	max
TD50	35.4	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0108893	mol/kg	TEST QSAR	
Ames mutagenicity test	0.148	no units	TEST QSAR	
Developmental toxin test	0.374	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,1,2,2-Tetrachloroethane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	24,800	19	Sites	0.08	0.1	0.5	1.5	2	ug/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	20,407	91	Sites	0.45	0.05	0.5	2.68	200	ug/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,986	4	Sites	0.07	0.02	0.08	0.308	0.38	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	9	3,447

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	466	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	885	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,098	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,714	4	Sites	0.08	0.8	1.2	3.36	4.28	ug/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	3	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	130	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,521	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	112	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	9,727	14	Sites	0.14	0.3	4.3	15.2	26	ug/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	158	0	Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00001	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	<LOD	ng/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	18.1425	days	
Boiling point	OPERA QSAR	146.511	degree C	
Boiling point	TEST QSAR	132.363	degree C	
Vapor pressure	OPERA QSAR	4.66657	mmHg	
Vapor pressure	TEST QSAR	5.3827	mmHg	
Solubility in water	OPERA QSAR	2946380.848	ug/L	
Solubility in water	TEST QSAR	1806747.248	ug/L	
Bioconcentration factor	OPERA QSAR	12.8634	no units	
Bioconcentration factor	TEST QSAR	15.5239	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	79.4196	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.50469	no units	
Henry's Law constant	OPERA QSAR	0.000368816	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,1,2,2-Tetrachloroethane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
48	CALEPA. 2003. Public Health Goals for Chemicals in Drinking Water, 1,1,2,2-tetrachloroethane in Drinking Water. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
120	NCI. 1978. Bioassay of 1,1,2,2-tetrachloroethane for possible carcinogenicity. National Cancer Institute. PB2774537, 90.
221	USEPA. 2008. Drinking Water Health Advisory for 1,1,2,2-Tetrachloroethane. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
237	USEPA. 2010. Chemical Assessment Summary for 1,1,2,2-Tetrachloroethane; CASRN 79-34-5. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.

1,1-Dichloroethane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,1-Dichloroethane
CASRN:	75-34-3
DTXSID:	DTXSID1020437
Use:	Reagent and chemical intermediate; solvent for paint, varnishes; degreaser
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00057

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects		

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1000	based on increased urinary enzyme markers for renal damage and CNS depression	general population	PPRTV 2006

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.572	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination on 1,1-dichloroethane in RD 4 (2021). The agency found that an NPDWR for 1,1-dichloroethane did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- No detections exceeded ½ the RD 4 HRL in UCMR 3 monitoring
- RD 4 HRL = 1000 µg/L

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,1-Dichloroethane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	CALEPA 2003	Hofmann et al. 1971	kidney damage in cats	general population	0.0338	200	[47]	
Cancer Slope Factor (CSF)	0.0057	$(mg/kg/day)^{-1}$	CALEPA 2003	OEHHA 1992; NCI 1978	based on mammary gland adenocarcinomas observed in the female Osborne-Mendel rats	general population	0.0338	5.2	[47]	
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	PPRTV 2006	Muralidhara et al. 2001	based on increased urinary enzyme markers for renal damage and CNS depression	general population	0.0338	1000	[213]	provisional chronic oral RfD
Reference Dose (RfD) or Equivalent			ATSDR 2015						[25]	MRLs were not derived for 1,1-dichloroethane.
Cancer Classification (CC)	S		PPRTV 2006						[213]	S = Suggestive evidence for carcinogenicity
Reference Dose (RfD) or Equivalent			WHO 2003						[403]	Note from the assessment: In view of the very limited database on toxicity and carcinogenicity, it is concluded that no guideline value should be proposed.
Reference Dose (RfD) or Equivalent			IRIS 1990						[166]	Note: Oral RfD not evaluated
Cancer Classification (CC)	C		IRIS 1990						[166]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						8/1/2014	7/10/2024	16	0	3	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.4	mg/l	MN DOH	
Public Health Goal	0.003	mg/l	CalEPA OEHHA Public Health Goals	
Cancer Slope Factor (CSF)	0.0057	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.08	mg/l	MN DOH	
Inhalation Unit Risk (IUR)	0.0000016	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Provisional Subchronic RfD	2	mg/kg/day	EPA PPRTV	
Subchronic Health-Based Guidance Value	0.4	mg/l	MN DOH	
Cancer Classification (CC)	Female.Mice E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	725	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	
TD50	11200	mg/kg/day	NIH CPDB	max
TD50	336	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.015417	mol/kg	TEST QSAR	
Ames mutagenicity test	0.223	no units	TEST QSAR	
Developmental toxin test	0.553	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,1-Dichloroethane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	244	Sites	5	0.03	0.084	0.572	8.125	ug/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	24,808	184	Sites	0.74	0.00126	1	3.8	159	ug/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	20,483	233	Sites	1	0.01	1.2	5.6	500	ug/L	
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,325	254	Sites	3	0.01	0.044	0.2	39	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	5	9,725

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000,000 - 1,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	5	Sites	9	0.021	0.031	0.223	0.347	ug/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	471	12	Sites	3	0.1	0.7	1.4	5.8	ug/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	885	6	Sites	0.68	0.51	0.9	3.73	6.7	ug/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	3	Sites	0.25	0.5	0.75	1.2	1.2	ug/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	4	Sites	19	0.027	0.171	0.355	0.414	ug/L	
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.01191	0.012	0.03	0.03448	ug/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites							
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,714	27	Sites	0.57	0.09	0.73	1.7	6	ug/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	3	1	Sites	33	1.2	1.2	1.2	1.2	ug/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	133	9	Sites	7	0.5	1.22	3.95	122	ug/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	2	Sites	15	0.22	0.57	0.86	0.99	ug/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,666	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	112	2	Sites	2	0.54	10	16	18	ug/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	13,916	669	Sites	5	0.009	0.321	4.06	4850	ug/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			0.066	0.066		ug/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.01435	0.0144	0.0144	0.01435	ug/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	17	Sites	2	0.012	0.025	0.121	3.9	ug/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000255	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	<LOD	ng/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.664	days	
Boiling point	OPERA QSAR	57.4463	degree C	
Boiling point	TEST QSAR	59.427	degree C	
Vapor pressure	OPERA QSAR	226.894	mmHg	
Vapor pressure	TEST QSAR	174.985	mmHg	
Solubility in water	OPERA QSAR	5063865.2	µg/L	
Solubility in water	TEST QSAR	4959245.365	µg/L	
Bioconcentration factor	OPERA QSAR	6.5316	no units	
Bioconcentration factor	TEST QSAR	7.7983	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	30.2339	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.7897	no units	
Henry's Law constant	OPERA QSAR	0.0056599	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,1-Dichloroethane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
25	ATSDR. 2015. Toxicological Profile for 1,1-Dichloroethane. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
47	CalEPA. 2003. Public Health Goals for Chemicals in Drinking Water, 1,1-dichloroethane in Drinking Water. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
117	Muralidhara, S., R. Ramanathan, S.M. Mehta, L.H. Lash, D. Acosta, and J.V. Bruckner. 2001. Acute, subacute, and subchronic oral toxicity studies of 1,1-dichloroethane in rats: application to risk evaluation. Toxicol. Sci. 64:135-145.
166	USEPA. 1990. Chemical Assessment Summary 1,1-Dichloroethane; CASRN 75-34-3. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
213	USEPA. 2006. Provisional Peer-Reviewed Toxicity Values for 1,1-Dichloroethane (CASRN 75-34-3). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.
403	WHO. 2003. 1,1-Dichloroethane in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

1,2,3-Trichloropropane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,2,3-Trichloropropane
CASRN:	96-18-4
DTXSID:	DTXSID9021390
Use:	Paint ingredient
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	560

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	Carcinogen with mutagenic mode of action	8	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0005	forestomach neoplasms	general population	IRIS 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.28	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,2,3-Trichloropropane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.006	mg/kg/day	OW 1989	NTP 1983 a and b	effects on body and organ weights, hematological effects, changes in clinical chemistry and histopathological effects	general population	0.0338	40	[160]	
Reference Dose (RfD) or Equivalent	0.0057	mg/kg/day	CALEPA 2009	NTP 1993	effects on erythrocytes	general population	0.0338	34	[49]	
Reference Dose (RfD) or Equivalent	0.004	mg/kg/day	IRIS 2009	NTP 1993	increased absolute liver weight	general population	0.0338	20	[229]	
Cancer Slope Factor (CSF)	25	$(mg/kg/day)^{-1}$	CALEPA 2009	NTP 1993	forestomach neoplasms	general population		0.0006	[49]	
Cancer Slope Factor (CSF)	30	$(mg/kg/day)^{-1}$	IRIS 2009	NTP 1993	forestomach neoplasms	general population		0.0005	[229]	
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	ATSDR 2021	NTP 1993	Bile duct hyperplasia	general population	0.0338	60	[32]	
Cancer Classification (CC)	L		IRIS 2009						[229]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.6	mg/l	EPA DWSHA 2018	
Acute inhalation Minimal Risk Level (MRL)	0.001	mg/l	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	0.007	mg/l	MN DOH	
Public Health Goal	0.0000007	mg/l	CalEPA OEHHA Public Health Goals	
Notification Level	0.000005	mg/l	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.007	mg/l	MN DOH	Chronic value for developmental
Chronic Health-Based Guidance Value	0.0000003	mg/l	MN DOH	Chronic value for cancer
Intermediate Minimal Risk Level (MRL)	0.03	mg/kg/day	CDC ATSDR	
Reference Concentration (RfC)	0.0003	mg/m^3	EPA IRIS	
Subchronic Health-Based Guidance Value	0.007	mg/l	MN DOH	
Cancer Classification (CC)	2A	no units	WHO IARC	2A = Probably carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	320	mg/kg	NIH HSDB	min
LD50	505	mg/kg	NIH HSDB	max
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	63	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	32	mg/kg/day	EPA Toxicity Reference Database	min
TD50	0.806	mg/kg/day	NIH CPDB	min
TD50	454	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00803526	mol/kg	TEST QSAR	
Ames mutagenicity test	0.673	no units	TEST QSAR	
Developmental toxin test	0.462	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,2,3-Trichloropropane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	67	Sites	1	0.03	0.073	0.28	1.02	ug/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	24,088	19	Sites	0.08	0.03	0.5	16.6	3000	ug/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	17,392	44	Sites	0.25	0.1	0.915	6	112	ug/L	
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,231	92	Sites	1	0.002	0.162	0.8	2.92	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	4,599

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	502	69	Sites	14	0.001	0.014	0.6	29	ug/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	885	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,204	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			400	400		ug/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,640	373	Sites	8	0.0018	0.032	0.31	270	ug/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	3	1	Sites	33	1.9	1.9	1.9	1.9	ug/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	130	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	14	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,690	1	Sites	0.06	0.0322	0.0335	0.0345	0.0348	ug/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	112	1	Sites	0.89	0.33	0.33	0.33	0.33	ug/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,489	146	Sites	1	0.002	0.0284	0.326	2.3	ug/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	12	Sites	2	0.005	0.0215	0.132	0.526	ug/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000136	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	<LOD	ng/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.60367	days	
Boiling point	OPERA QSAR	156.803	degree C	
Boiling point	TEST QSAR	145.101	degree C	
Vapor pressure	OPERA QSAR	3.72541	mmHg	
Vapor pressure	TEST QSAR	6.56145	mmHg	
Solubility in water	OPERA QSAR	1757305.368	µg/L	
Solubility in water	TEST QSAR	1736032.662	µg/L	
Bioconcentration factor	OPERA QSAR	12.8656	no units	
Bioconcentration factor	TEST QSAR	16.1808	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	253.597	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.27044	no units	
Henry's Law constant	OPERA QSAR	0.000343459	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,2,3-Trichloropropane
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
32	ATSDR. 2021. Toxicological Profile for 1,2,3-Trichloropropane. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
49	CalEPA. 2009. Public Health Goals for Chemicals in Drinking Water, 1,2,3-Trichloropropane. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
160	USEPA. 1989. 1,2,3-Trichloropropane Drinking Water Health Adivsory. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
229	USEPA. 2009. Chemical Assessment Summary, 1,2,3-Trichloropropane. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

1,2,4-Triazole

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,2,4-Triazole
CASRN:	288-88-0
DTXSID:	DTXSID6027131
Use:	Used in adhesives and sealant chemicals; pesticide transformation product
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.015

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	30	Based on decreased body weight in adult males, decreased body weight and brain weight in offspring.	general population	OPP 2021, OPP 2006

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.446	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,2,4-Triazole
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.005	mg/kg/day	OPP 2006; OPP 2021	MRID: 46467304	Based on decreased body weight in adult males, decreased body weight and brain weight in offspring.	general population	0.0338	30	[211]; [357]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	I		OPP 2006; OPP 2021						[211]; [357]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.2	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.03	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.03	mg/l	Health-based screening levels from USGS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1350	mg/kg	NIH HSDB	min
LD50	1750	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	6	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0139637	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.571	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,2,4-Triazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,250	173	Sites	8	0.0027	0.0806	0.446	17.2	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	4	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,714	154	Sites	9	0.0064	0.103	0.375	3.53	ug/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	19	Sites	3	0.0047	0.0352	0.208	2.05	ug/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000716	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.75529	days	
Boiling point	OPERA QSAR	198.221	degree C	
Boiling point	TEST QSAR	239.481	degree C	
Vapor pressure	OPERA QSAR	0.728039	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	83412906.57	ug/L	
Solubility in water	TEST QSAR	74863793.31	ug/L	
Bioconcentration factor	OPERA QSAR	1.46424	no units	
Bioconcentration factor	TEST QSAR	0.663743	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	8.29609	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.579128	no units	
Henry's Law constant	OPERA QSAR	0.000000132	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,2,4-Triazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
211	USEPA. 2006. 1,2,4-Triazole, Triazole Alanine, Triazole Acetic Acid: Human Health Aggregate Risk Assessment in Support of Reregistration and Registration Actions for Triazole-derivative Fungicide Compounds. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 322215.
357	USEPA. 2021. Common Triazole Metabolites: Updated Dietary (Food + Water) Exposure and Risk Assessment to Address The Establishment of a Difenoconazole Tolerances with No U.S. Registration for Imported Avocado, Section 3 Registrations on Corn, Peanut, and Caneberry 13-07A and Mefentrifluconazole Tolerances with no U.S. Registration for Imported Banana and Coffee. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D461600, D461602.

1,2,4-Trimethylbenzene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,2,4-Trimethylbenzene
CASRN:	95-63-6
DTXSID:	DTXSID6021402
Use:	Chemical intermediate; vermifuge
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.17

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	6	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	decreased pain sensitivity	general population	IRIS 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
10	90th Percentile	Finished Water	UCM1	1988 - 1992

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,2,4-Trimethylbenzene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	IRIS 2016	Korsak and Rydzynski 1996	decreased pain sensitivity	general population	0.0338	60	[274]	
Cancer Classification (CC)	D		OW 1987						[157]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	D		PPRTV 2007						[217]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	I		IRIS 2016						[274]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2015	4/6/2020	17	0	0	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.03	mg/l	MN DOH	
Notification Level	0.33	mg/l	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.03	mg/l	MN DOH	
Reference Concentration (RfC)	0.06	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	0.08	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	0.2	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	3	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	4	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	4	$µg/m^3$	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.03	mg/l	MN DOH	
Subchronic RfD	0.04	mg/kg/day	EPA IRIS	
Subchronic RfC	0.2	mg/m^3	EPA IRIS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3280	mg/kg	NIH HSDB	min
LD50	6000	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0282488	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.482	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,2,4-Trimethylbenzene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	22,965	174	Sites	0.76	0.1	0.8	5.42	137	ug/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	12,755	106	Sites	0.83	0.02	1	10	77	ug/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,190	621	Sites	9	0.003	0.03	0.2	260	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	50	4,106,327

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000,000 - 250,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	1	Sites	2	0.017	0.017	0.017	0.017	ug/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	405	5	Sites	1	0.039	1.15	8.02	22.3	ug/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	884	11	Sites	1	0.5	0.68	2.1	2.4	ug/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	1	Sites	0.08	1.4	1.4	1.4	1.4	ug/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,250	14	Sites	0.33	0.034	0.645	2.45	3.5	ug/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	130	2	Sites	2	0.6	0.79	0.798	0.8	ug/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,665	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	101	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	9,337	552	Sites	6	0.006	0.051	1	5210	ug/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	18	Sites	3	0.012	0.039	0.161	0.274	ug/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000825	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.01399	days	
Boiling point	OPERA QSAR	170.017	degree C	
Boiling point	TEST QSAR	178.053	degree C	
Vapor pressure	OPERA QSAR	2.09577	mmHg	
Vapor pressure	TEST QSAR	1.49279	mmHg	
Solubility in water	OPERA QSAR	56957.04504	µg/L	
Solubility in water	TEST QSAR	186589.5161	µg/L	
Bioconcentration factor	OPERA QSAR	123.343	no units	
Bioconcentration factor	TEST QSAR	218.776	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	846.864	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.62962	no units	
Henry's Law constant	OPERA QSAR	0.00620397	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,2,4-Trimethylbenzene
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
157	USEPA. 1987. Drinking Water Health Advisory for 1,2,4-trimethylbenzene. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH.
217	USEPA. 2007. Provisional Peer-Reviewed Toxicity Values for 1,2,4-Trimethylbenzene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
274	USEPA. 2016. Toxicological Review of Trimethylbenzenes. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

1,2-Diphenylhydrazine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,2-Diphenylhydrazine
CASRN:	122-66-7
DTXSID:	DTXSID7020710
Use:	Used in the production of anti-inflammatory drugs
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	2500

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.04	hepatocellular carcinomas and neoplastic liver nodules, test animals — rat/Fisher 344, male	general population	IRIS 1991

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
100	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,2-Diphenylhydrazine
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	ATSDR 2020	Dodd et al. 2012	Liver hypertrophy, eosinophilic granular cytoplasm, and bile duct duplication	general population	0.0338	300	[30]	Note: Oral Intermediate MRL derived from a study of 13-weeks exposure period in rats (actually >10% of lifetime and considered chronic for EPA). The available chronic oral data (NCI 1978) were not considered adequate for derivation of a chronic oral MRL. Rationale for Not Deriving an oral chronic MRL: The only available chronic-duration oral study was not considered suitable for derivation of an MRL due to the long duration (28–30 weeks) between exposure termination and histological examination and methodological problems with the only available study.
Cancer Slope Factor (CSF)	0.8	$(mg/kg/day)^{-1}$	IRIS 1991	NCI 1979	hepatocellular carcinomas and neoplastic liver nodules, test animals — rat/Fisher 344, male	general population	0.0338	0.04	[173]	
Reference Dose (RfD) or Equivalent			IRIS 1991						[173]	Note: An oral RfD was not evaluated.
Cancer Classification (CC)	B2		IRIS 1991						[173]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						10/1/2019	8/8/2024	3	0	0	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Slope Factor (CSF)	0.87	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Human Health Ambient Water Quality Criteria	0.00003	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.00022	$(\mu g/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.00025	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.05	mg/kg/day	CDC ATSDR	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	
TD50	3.55	mg/kg/day	NIH CPDB	min
TD50	8760	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00267917	mol/kg	TEST QSAR	
Ames mutagenicity test	0.952	no units	TEST QSAR	
Developmental toxin test	0.689	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,2-Diphenylhydrazine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	295	0	Sites	0	ND	ND	ND		ug/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	3

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,291	8	Sites	0.62	0.03	11.8	100	260	ug/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000869	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	23.9979	days	
Boiling point	OPERA QSAR	309.105	degree C	
Boiling point	TEST QSAR	253.74	degree C	
Vapor pressure	OPERA QSAR	0.00043233	mmHg	
Vapor pressure	TEST QSAR	0.000108643	mmHg	
Solubility in water	OPERA QSAR	220340.5351	ug/L	
Solubility in water	TEST QSAR	243999.0503	ug/L	
Bioconcentration factor	OPERA QSAR	33.8696	no units	
Bioconcentration factor	TEST QSAR	157.036	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	958.288	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.94097	no units	
Henry's Law constant	OPERA QSAR	6.67E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,2-Diphenylhydrazine
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
30	ATSDR. 2020. Toxicological Profile for 1,2-Diphenylhydrazine. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
173	USEPA. 1991. Chemical Assessment Summary 1,2-Diphenylhydrazine; CASRN 122-66-7. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

1,3-Butadiene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,3-Butadiene
CASRN:	106-99-0
DTXSID:	DTXSID3020203
Use:	Rubber chemical
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		1	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.518	90th Percentile	Finished Water	UCMR 3	2013-2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,3-Butadiene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			ATSDR 2012						[19]	Note: oral toxicity values not derived because "no studies were located regarding health effects in humans or animals after oral exposure to 1,3-butadiene."
			IRIS 2002						[199]	Note: oral toxicity values not derived because 1,3-butadiene is a gas, is poorly soluble in water, and causes hazard by inhalation only

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						11/1/2001	2/13/2020	1334	0	45	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	1	no units	WHO IARC	1 = Carcinogenic to humans
Cancer Slope Factor (CSF)	0.6	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Inhalation Unit Risk (IUR)	0.00003	$(\mu g/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.00017	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Reference Concentration (RfC)	0.002	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	2	$\mu g/m^3$	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5480	mg/kg	NIH HSDB	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0291072	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.572	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,3-Butadiene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	2	Sites	0.04	0.32	0.43	0.518	0.54	ug/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,910	1	Sites	0.05	0.81	0.81	0.81	0.81	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	31	1,215,040

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,008	0	Sites	0						
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000936	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.46888	days	
Boiling point	OPERA QSAR	-4.28507	degree C	
Boiling point	TEST QSAR	18.339	degree C	
Vapor pressure	OPERA QSAR	2082.77	mmHg	
Vapor pressure	TEST QSAR	1213.39	mmHg	
Solubility in water	OPERA QSAR	735283.3744	µg/L	
Solubility in water	TEST QSAR	1175256.884	µg/L	
Bioconcentration factor	OPERA QSAR	11.0393	no units	
Bioconcentration factor	TEST QSAR	7.31139	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	16.1577	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.98909	no units	
Henry's Law constant	OPERA QSAR	0.0412947	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,3-Butadiene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
19	ATSDR. 2012. Toxicological Profile for 1,3-Butadiene. U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
199	USEPA. 2002. Chemical Assessment Summary, 1,3-Butadiene. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

1,3-Dichloropropene

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,3-Dichloropropene
CASRN:	542-75-6
DTXSID:	DTXSID1022057
Use:	Pesticide; in organic synthesis
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.0067

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	150	Based on decreased body weight and increased incidence of basal cell hyperplasia of nonglandular stomach mucosa.	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1	90th Percentile	Finished Water	UCM1	1988 - 1992

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on 1,3-dichloropropene (DCP) in RD 2 (2008). The EPA identified that 1,3-DCP did not appear to occur frequently at levels of public health concern in PWSs, and thus an NPDWR did not present a meaningful opportunity for health risk reduction based on, among other data, the following:
- RD 2 HRL = 0.4 µg/L
- Detections in the UCM-State Rounds 1 and 2 monitoring
- No detections in a subsequent evaluation of 796 small systems in UCMR 1 monitoring
- No detections in USGS monitoring studies from 1999 to 2001

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,3-Dichloropropene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	OPP 2019	MRID 43757901	Based on decreased body weight and increased incidence of basal cell hyperplasia of nonglandular stomach mucosa.	general population	0.0338	150	[303]	
Cancer Classification (CC)	S		OPP 2019						[303]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.03	mg/l	EPA DWSHA 2018	
Public Health Goal	0.0002	mg/l	CalEPA OEHHA Public Health Goals	
Cancer Slope Factor (CSF)	0.091	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.0002	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.007	ppm	CDC ATSDR	
Drinking Water Guideline Value	0.02	mg/l	WHO Drinking Water Quality Guidelines	
Human Health Ambient Water Quality Criteria	0.00027	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.000004	$(\mu g/m^3)^{-1}$	EPA IRIS	
Intermediate Inhalation Minimal Risk Level (MRL)	0.008	ppm	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.04	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.0004	mg/l	EPA DWSHA 2018	
Reference Concentration (RfC)	0.02	mg/m^3	EPA IRIS	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats SE	no units	HHS NTP	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice IS	no units	HHS NTP	IS = Inadequate study of carcinogenic activity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	713	mg/kg	NIH HSDB	max
LD50	94	mg/kg	NIH HSDB	min
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00398107	mol/kg	TEST QSAR	
Developmental toxin test	0.342	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,3-Dichloropropene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	796	0	Sites	0	ND	ND	ND		µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	16,787	58	Sites	0.35	0.2	0.5	0.99	39	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	9,164	15	Sites	0.16	0.5	1	1.63	2	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	7	64,459

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	20,000,000 - 100,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	464	2	Sites	0.43	0.5	1	1	1	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	879	1	Sites	0.11	1.3	1.3	1.3	1.3	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,667	5	Sites	0.11	0.52	0.605	0.75	10	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	2	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	129	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	112	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	826	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	21	0	Sites	0				0	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000268	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.37147	days	
Boiling point	OPERA QSAR	109.076	degree C	
Boiling point	TEST QSAR	97.43	degree C	
Vapor pressure	OPERA QSAR	31.1066	mmHg	
Vapor pressure	TEST QSAR	41.9759	mmHg	
Solubility in water	OPERA QSAR	1988049.744	µg/L	
Solubility in water	TEST QSAR	2542178.439	µg/L	
Bioconcentration factor	OPERA QSAR	7.94442	no units	
Bioconcentration factor	TEST QSAR	12.3027	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	46.2635	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.03987	no units	
Henry's Law constant	OPERA QSAR	0.0023686	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,3-Dichloropropene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
303	USEPA. 2019. 1,3-Dichloropropene (Telone): Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D454712
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

1,4-Dioxane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1,4-Dioxane
CASRN:	123-91-1
DTXSID:	DTXSID4020533
Use:	Solvent; solvent stabilizer
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	3.7

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear MOA	10	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.25	hepatocellular adenoma or carcinoma in female mice	general population	OPPT 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.93	90th Percentile	Finished Water	UCMR 3	2013-2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1,4-Dioxane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	ATSDR 2012	Kociba et al. 1974	liver effects in male rats	general population	0.0338	600	[20]	
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	IRIS 2013	Kociba et al. 1974	liver and kidney toxicity	general population	0.0338	200	[245]	
Reference Dose (RfD) or Equivalent	0.096	mg/kg/day	WHO 2005	Kociba et al. 1974	renal tubular epithelial and hepatocellular degeneration and necrosis	general population	0.0338	570	[412]	
Cancer Slope Factor (CSF)	0.1	$(mg/kg/day)^{-1}$	IRIS 2013	Kano et al. 2009	hepatocellular adenomas and carcinomas in female mice	general population	0.0338	0.3	[245]	
Reference Dose (RfD) or Equivalent	0.0054	mg/kg/day	HC 2021	Kociba et al. 1974; Dourson et al. 2014	hepatocellular necrosis as an early event of liver cancer	general population	0.0338	32	[84]	
Cancer Slope Factor (CSF)	0.12	$(mg/kg/day)^{-1}$	OPPT 2020	Kano et al. 2009	hepatocellular adenoma or carcinoma in female mice	general population	0.0338	0.25	[340]	
Cancer Classification (CC)	L		IRIS 2013						[245]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic, Systemic	440	Gi, 2018	Hepatic	562	Gi, 2018						1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.4	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	5	mg/kg/day	CDC ATSDR	
Acute inhalation Minimal Risk Level (MRL)	2	ppm	CDC ATSDR	
Notification Level	0.001	mg/l	CalEPA OEHHA Chemical Database	
Cancer Slope Factor (CSF)	0.027	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	Chronic value based on liver, kidney, and respiratory systems
Chronic Health-Based Guidance Value	0.0001	mg/l	MN DOH	Cancer value
Chronic inhalation Minimal Risk Level (MRL)	0.03	ppm	CDC ATSDR	
Drinking Water Guideline Value	0.05	mg/l	WHO Drinking Water Quality Guidelines	
Inhalation Unit Risk (IUR)	0.000005	$(\mu g/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.0000077	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Inhalation Minimal Risk Level (MRL)	0.2	ppm	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.5	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.00035	mg/l	EPA DWSHA 2018	10-6 cancer risk value
Lifetime Health Advisory	0.2	mg/l	EPA DWSHA 2018	Non-cancer lifetime health advisory
Maximum Allowable Concentration (MAC)	0.05	mg/l	Canadian Drinking Water Guidelines	
Reference Concentration (RfC)	0.03	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	3000	$\mu g/m^3$	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.3	mg/l	MN DOH	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	min
LD50	5700	mg/kg	NIH HSDB	max
LOAEL	240	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	860	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	240	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	860	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	
TD50	40.5	mg/kg/day	NIH CPDB	min
TD50	71900	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0335738	mol/kg	TEST QSAR	
Ames mutagenicity test	0.069	no units	TEST QSAR	
Developmental toxin test	0.408	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

1,4-Dioxane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,915	1077	Sites	22	0.07	0.17	0.93	34	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,904	11	Sites	0.58	0.473	1.64	14.9	18.9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	25	696,837

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000 - 500,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	42	18	Sites	43	0.5	1.5	3.2	9.1	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	10	8	Sites	80	0.0081	0.2	0.51	1.1	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	1	Sites	100	10.5	10.5	10.5	10.5	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			0.8	1.4		µg/L	
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	274	67	Sites	24	0.27	2	5.9	36	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	6	5	Sites	83	0.0272	0.24	1.3	3.5	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,790	185	Sites	7	0.083	3.1	8.6	31000	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			0.9	1.3		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	11	0.7226	0.987	2.77	3.537	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	2	Sites	0.38	1	1.5	1.9	2	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000693	min
Expocast exposure		0.0000161	max

Biomonitoring Data	Detection at 90th	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	<LOD	ng/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	9.35852	days	
Boiling point	OPERA QSAR	101.605	degree C	
Boiling point	TEST QSAR	99.984	degree C	
Vapor pressure	OPERA QSAR	38.1433	mmHg	
Vapor pressure	TEST QSAR	46.9894	mmHg	
Solubility in water	OPERA QSAR	1005324702	µg/L	
Solubility in water	TEST QSAR	414004807.6	µg/L	min
Solubility in water	TEST QSAR	421701747.8	µg/L	max
Bioconcentration factor	OPERA QSAR	0.505112	no units	
Bioconcentration factor	TEST QSAR	1.49968	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	16.9364	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.269108	no units	
Henry's Law constant	OPERA QSAR	0.0000049	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1,4-Dioxane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
20	ATSDR. 2012. Toxicological Profile for 1,4-Dioxane. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
84	HC. 2021. Guidelines for Canadian Drinking Water Quality: Guideline Technical Document for 1,4-Dioxane. Health Canada (HC), Ottawa, Ontario, Canada.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
245	USEPA. 2013. Chemical Assessment Summary, 1,4-Dioxane. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
340	USEPA. 2020. Final Risk Evaluation for 1,4-Dioxane. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
412	WHO. 2005. 1,4-Dioxane in Drinking-water. WHO Guidelines for Drinking-water Quality. World Health Organization (WHO), Geneva, Switzerland.

1-Methylnaphthalene

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	1-Methylnaphthalene
CASRN:	90-12-0
DTXSID:	DTXSID9020877
Use:	Used as a solvent and to make surfactants, insecticides, dyes, resins, and other organic chemicals.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.084

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.58	based on significantly increased incidence of lung tumors (combined adenomas or adenocarcinomas) in treated male mice	general population	PPRTV 2024

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.049	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

1-Methylnaphthalene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	PPRTV 2024	Murata et al. 1993	Pulmonary alveolar proteinosis (PAP) observed in both male and female mice	general population	0.0338	60	[396]	Screening Chronic p-RfD
Cancer Slope Factor (CSF)	0.051	$(mg/kg/day)^{-1}$	PPRTV 2024	Murata et al. 1993	based on significantly increased incidence of lung tumors (combined adenomas or adenocarcinomas) in treated male mice	general population	0.0338	0.58	[396]	Screening Provisional Oral Slope Factor (p-OSF)
Reference Dose (RfD) or Equivalent			EFSA 2015						[67]	Note: In the process of being deleted from the Union List
Cancer Classification (CC)	S		PPRTV 2024						[396]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						3/1/2023	8/12/2024	25	0	1	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1840	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00914113	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.564	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

1-Methylnaphthalene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	565	9	Sites	1.59	0.01	0.012	0.049	0.078	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1882047

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	1	Sites	2	0.017	0.017	0.017	0.017	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,234	382	Sites	12	0.001	0.015	0.0718	810	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0042	0.00705	0.00933	0.0099	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	16	Sites	76	0.011	0.026	0.097	0.338	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000817	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	9.1457	days	
Boiling point	OPERA QSAR	244.559	degree C	
Boiling point	TEST QSAR	250.351	degree C	
Vapor pressure	OPERA QSAR	0.0667749	mmHg	
Vapor pressure	TEST QSAR	0.0242103	mmHg	
Solubility in water	OPERA QSAR	27549.87954	µg/L	
Solubility in water	TEST QSAR	19948.09848	µg/L	
Bioconcentration factor	OPERA QSAR	54.104	no units	
Bioconcentration factor	TEST QSAR	275.423	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2291.34	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.86776	no units	
Henry's Law constant	OPERA QSAR	0.000515308	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

1-Methylnaphthalene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
67	European Food Safety Authority (EFSA). 2015. Scientific Opinion on Flavouring Group Evaluation 78, Revision 2 (FGE.78Rev2): Consideration of aliphatic and alicyclic and aromatic hydrocarbons evaluated by JECFA (63rd meeting) structurally related to aliphatic hydrocarbons evaluated by EFSA in FGE.25Rev30F. EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids, European Food Safety Authority (EFSA), Parma, Italy.
105	Masoner. 2019. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
396	USEPA. 2024. Provisional Peer-Reviewed Toxicity Values for 1-Methylnaphthalene (CASRN 90-12-0). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

2,4,6-Trinitrotoluene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2,4,6-Trinitrotoluene
CASRN:	118-96-7
DTXSID:	DTXSID7024372
Use:	Explosive; intermediate in dyestuffs and photographic chemicals
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.1

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1	urinary bladder, transitional cell papilloma and transitional squamous cell carcinomas in rat/Fischer 344, female	general population	IRIS 1989

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.05	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2,4,6-Trinitrotoluene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0005	mg/kg/day	ATSDR 1995	Levine et al. 1990	based on the occurrence of dose-related liver effects (cloudy swelling and hepatocytomegaly) noted in dogs administered 0.5 mg/kg/day by capsule for 6 months	general population	0.0338	3	[4]	Note: Oral Intermediate MRL; "Chronic-duration exposure to the intermediate-duration oral MRL of 0.0005 mg/kg/day, which is the same value as the EPA's chronic oral Reference Dose (RfD), would not be anticipated to cause adverse health effects."
Reference Dose (RfD) or Equivalent	0.0005	mg/kg/day	IRIS 1989	U.S. DOD 1983	significant increases in relative and/or absolute liver weight accompanied by	general population	0.0338	3	[162]	
Cancer Slope Factor (CSF)	0.03	$(mg/kg/day)^{-1}$	IRIS 1989	U.S. DOD 1984	urinary bladder, transitional cell papilloma and transitional squamous cell	general population	0.0338	1	[162]	
Cancer Classification (CC)	C		IRIS 1989		carcinomas in rat/Fischer 344, female				[162]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hematologic	50	Cui, 1995				6/1/1994	8/12/2024	2566	4	28	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.02	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Intermediate Minimal Risk Level (MRL)	0.0005	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.001	mg/l	EPA DWSHA 2018	10-6 cancer risk value
Lifetime Health Advisory	0.002	mg/l	EPA DWSHA 2018	Non-cancer lifetime health advisory

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1012	mg/kg	NIH HSDB	max
LD50	660	mg/kg	NIH HSDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000909913	mol/kg	TEST QSAR	
Ames mutagenicity test	0.812	no units	TEST QSAR	
Developmental toxin test	0.768	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

2,4,6-Trinitrotoluene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	4,139	0	Sites	0	ND	ND	ND	ND	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	3791219

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	182	8	Sites	4	0.08	0.31	1.05	2	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000781	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.8891	days	
Boiling point	OPERA QSAR	302.265	degree C	
Boiling point	TEST QSAR	330.942	degree C	
Vapor pressure	OPERA QSAR	0.00000804	mmHg	
Vapor pressure	TEST QSAR	0.00000753	mmHg	
Solubility in water	OPERA QSAR	129110.4598	µg/L	
Solubility in water	TEST QSAR	311370.7162	µg/L	
Bioconcentration factor	OPERA QSAR	9.76704	no units	
Bioconcentration factor	TEST QSAR	3.83707	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	423.692	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.5994	no units	
Henry's Law constant	OPERA QSAR	0.000000393	atm-m^3/mol	

2,4,6-Trinitrotoluene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
4	ATSDR. 1995. Toxicological Profile for 2,4,6-Trinitrotoluene. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
162	USEPA. 1989. Chemical Assessment Summary 2,4,6-Trinitrotoluene; CASRN 118-96-7. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

2,4-DB

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2,4-DB
CASRN:	94-82-6
DTXSID:	DTXSID7024035
Use:	Post-emergent herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00082

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	3	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	850	increased early resorptions (rabbits); decreased body weight in males and females, increased relative kidney weights and increased incidence of tubular degeneration in females (rats)	females of reproductive age	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.698	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2,4-DB

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OPP 2018	MRID 41529902 (Henwood, 1990); MRID 41775401 (Henwood, 1990)	increased early resorptions (rabbits); decreased body weight in males and females, increased relative kidney weights and increased incidence of tubular degeneration in females (rats)	females of reproductive age	0.0354	850	[287]	
Cancer Classification (CC)	NL		OPP 2018						[287]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Drinking Water Guideline Value	0.09	mg/l	WHO Drinking Water Quality Guidelines	
Health-Based Screening Level	0.2	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	400	mg/kg	NIH HSDB	min
LD50	700	mg/kg	NIH HSDB	max
LOAEL	133	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	6.07	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	112.5	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.15	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	158	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	158	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	4.16	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0027227	mol/kg	TEST QSAR	
Ames mutagenicity test	0.07	no units	TEST QSAR	
Developmental toxin test	0.701	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

2,4-DB
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,886	12	Sites	0.204	0.01	0.045	0.698	1.1	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	46	776868	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	2

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	60	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.01	0.01	0.01	0.01	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	12	1	Sites	8.3	0.023	0.023	0.023	1.15	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	620	1	Sites	0.16	6.2	6.2	6.2	6.2	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,584	20	Sites	0.44	0.01	0.05	0.366	0.74	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	14	2	Sites	14	2.2	4.2	5.8	6.2	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0281	0.0768	0.116	0.1255	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	125	14	Samples	11				0.1	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water (acute)	2018	OPP	318.68	µg/L	Pesticide Root Zone Model (PRZM) v3.12, Exposure Analysis Modeling System	The critical effect of increased early resorptions is considered a less-than-chronic response seen during gestation. To be protective of pregnant women and fetuses, the modeled surface water acute concentration found in the most recent available EPA OPP health assessment was selected as the occurrence concentration for 2,4-dichlorophenoxybutyric acid.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000131	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53939	days	
Boiling point	OPERA QSAR	324.304	degree C	
Boiling point	TEST QSAR	321.218	degree C	
Vapor pressure	OPERA QSAR	0.00000043	mmHg	
Vapor pressure	TEST QSAR	0.000011	mmHg	
Solubility in water	OPERA QSAR	156351.5512	µg/L	
Solubility in water	TEST QSAR	85774.1415	µg/L	
Bioconcentration factor	OPERA QSAR	3.46699	no units	
Bioconcentration factor	TEST QSAR	15.5597	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	280.599	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.52802	no units	
Henry's Law constant	OPERA QSAR	1.47E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2,4-DB

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
287	USEPA. 2018. 2,4-DB: Draft Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2013-0661-0019. DP No. D448826. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

2,4-Dichlorophenol

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2,4-Dichlorophenol
CASRN:	120-83-2
DTXSID:	DTXSID1020439
Use:	Biocide; intermediate in production of herbicides
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	20	decreased delayed hypersensitivity response	general population	IRIS 1987

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.27	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2,4-Dichlorophenol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.003	mg/kg/day	IRIS 1987	Exon and Koller, 1985	decreased delayed hypersensitivity response	general population	0.0338	20	[152]	
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	HC 1987; HC 2022	Kobayashi et al., 1972	changes in liver histopathology	general population	0.0338	600	[87]; [85]	
Cancer Classification (CC)	NL		PPRTV 2007						[219]	Note: Not likely to be carcinogenic via oral exposure; NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						7/1/2006	3/25/2020	630	1	23	0

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.03	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.01	mg/l	EPA Human Health Criteria for CWA	
Intermediate Minimal Risk Level (MRL)	0.02	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.02	mg/l	EPA DWSHA 2018	
Provisional Subchronic RfD	0.02	mg/kg/day	EPA PPRTV	
Cancer Classification (CC)	Female.Mice NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2050	mg/kg	NIH HSDB	max
LD50	500	mg/kg	NIH HSDB	min
LOAEL	1300	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	210	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	120	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1300	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	6000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	6000	mg/kg/day	EPA Toxicity Reference Database	max
TD50	12400	mg/kg/day	NIH CPDB	min
TD50	458000	mg/kg/day	NIH CPDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0039355	mol/kg	TEST QSAR	
Ames mutagenicity test	0.015	no units	TEST QSAR	
Developmental toxin test	0.176	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

2,4-Dichlorophenol
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	294	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	4	108,199

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	20,000,000 - 100,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	6	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	36	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,865	83	Sites	4	0.01	0.04	0.27	530	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	24	0	Sites	0				0	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	8	Sites	38	0.042	0.079	0.147	0.235	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000166	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	3.8	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.01772	days	
Boiling point	OPERA QSAR	210.062	degree C	
Boiling point	TEST QSAR	237.218	degree C	
Vapor pressure	OPERA QSAR	0.0893548	mmHg	
Vapor pressure	TEST QSAR	0.0280543	mmHg	
Solubility in water	OPERA QSAR	4498327.3	µg/L	
Solubility in water	TEST QSAR	1409897.84	µg/L	
Bioconcentration factor	OPERA QSAR	31.5134	no units	
Bioconcentration factor	TEST QSAR	57.4116	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	832.297	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.05972	no units	
Henry's Law constant	OPERA QSAR	0.00000133	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2,4-Dichlorophenol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
85	HC. 2022. Withdrawal of Select Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Ottawa, Ontario, Canada.
87	Health Canada. 1987. Guideline Technical Document - Chlorophenols. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
152	USEPA. 1987. Chemical Assessment Summary, 2,4-Dichlorophenol. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
219	USEPA. 2007. Provisional Peer-Reviewed Toxicity Values for 2,4-Dichlorophenol. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

2,4-Dinitrotoluene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2,4-Dinitrotoluene
CASRN:	121-14-2
DTXSID:	DTXSID0020529
Use:	Chemical intermediate; in propellants
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	7500

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear mode of action	1	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0444	mammary gland tumors (adenomas, fibroadenomas, fibromas, adenocarcinomas/carcinomas) in female rats	general population	OW 2008

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
333	90th Percentile	Finished Water	UCMR 1	2001-2003

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on 2,4-dinitrotoluene (DNT) in RD 2 (2008). The EPA determined that 2,4-DNT did not appear to occur frequently at levels of public health concern in PWSs, and thus an NPDWR did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- Only one detection at or above the MRL of 2 µg/L in any of the PWSs monitored in UCMR 1 monitoring. While the MRL was higher than the RD 2 HRL of 0.05 µg/L, this concentration was within the acceptable 10-4 to the 10-6 cancer risk range targeted by EPA.
- RD 2 HRL = 0.05 µg/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2,4-Dinitrotoluene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.001	mg/kg/day	ATSDR 2016	U.S. Army. 1979; Ellis et al. 1985	"hematological effects (decreased erythrocyte count)"	general population	0.0338	6	[26]	
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	OW 2008	Ellis et al. 1979; Ellis et al. 1985	"neurotoxicity and the presence of Heinz bodies and biliary tract hyperplasia"	general population	0.0338	10	[222]	
Cancer Slope Factor (CSF)	0.667	$(mg/kg/day)^{-1}$	OW 2008	Ellis et al. 1979	mammary gland tumors (adenomas, fibroadenomas, fibromas, adenocarcinomas/carcinomas) in female rats	general population	0.0338	0.0444	[222]	
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	IRIS 1992	Ellis et al. 1985	"Neurotoxicity, Heinz bodies and biliary tract hyperplasia"	general population	0.0338	10	[181]	
Cancer Classification (CC)	L		OW 2008						[222]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic, Systemic	50	Maeda, 2015	Gastrointestinal	100	Maeda, 2015	2/1/2015	12/17/2019	65	1	0	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	1	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.05	mg/kg/day	CDC ATSDR	
Cancer Slope Factor (CSF)	0.31	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Human Health Ambient Water Quality Criteria	0.000049	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.000089	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.007	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.00005	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1954	mg/kg	NIH HSDB	max
LD50	268	mg/kg	NIH HSDB	min
LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	12	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	12	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
TD50	68	mg/kg/day	NIH CPDB	max
TD50	9.35	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00197242	mol/kg	TEST QSAR	
Ames mutagenicity test	0.808	no units	TEST QSAR	
Developmental toxin test	0.47	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

2,4-Dinitrotoluene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,873	1	Sites	0.026	333	333	333	333	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	8	2,177

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	54	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	265	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,000	14	Sites	0.7	0.13	4.9	11	250	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000747	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.5609	days	
Boiling point	OPERA QSAR	299.891	degree C	
Boiling point	TEST QSAR	304.767	degree C	
Vapor pressure	OPERA QSAR	0.000148326	mmHg	
Vapor pressure	TEST QSAR	0.000676083	mmHg	
Solubility in water	OPERA QSAR	231469.9075	µg/L	
Solubility in water	TEST QSAR	115716.0117	µg/L	
Bioconcentration factor	OPERA QSAR	9.12436	no units	
Bioconcentration factor	TEST QSAR	7.7983	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	342.952	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.97937	no units	
Henry's Law constant	OPERA QSAR	5.44E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2,4-Dinitrotoluene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
26	ATSDR. 2016. Toxicological Profile for Dinitrotoluenes. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
62	Ellis, H.V., J.H. Hagensen, J.R. Hodgson, et al. 1979. Mammalian toxicity of munitions compounds. Phase BI: Effects of lifetime exposure. Part I. 2,4-Dinitrotoluene. Final Report No. 7. Kansas City, MO: Midwest Research Institute. Contract No. DAMD 17-74-C-4073, ADA077 692.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
181	USEPA. 1992. Chemical Assessment Summary 2,4-Dinitrotoluene. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
222	USEPA. 2008. Drinking Water Health Advisory for 2,4-Dinitrotoluene and 2,6-Dinitrotoluene. EPA/822/R-08/010. U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.

2,6-Dinitrotoluene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2,6-Dinitrotoluene
CASRN:	606-20-2
DTXSID:	DTXSID5020528
Use:	Chemical intermediate in the manufacture of dyes and military and commercial explosives
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	980

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.02	hepatocellular carcinomas	general population	PPRTV 2013

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
19.6	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on 2,6-dinitrotoluene (DNT) in RD 2 (2008). The EPA determined that 2,6-DNT did not appear to occur at levels of public health concern in PWSs, and thus an NPDWR did not present a meaningful opportunity for health risk reduction based on, among other data, the following:
- No detections in UCMR 1 monitoring
- RD 2 HRL = 0.05 µg/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2,6-Dinitrotoluene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Cancer Slope Factor (CSF)	0.68	$(mg/kg/day)^{-1}$	IRIS 1990	Ellis et al. 1979	hepatocellular carcinomas and neoplastic nodules; mammary gland adenomas, fibroadenomas, fibromas, and adenocarcinomas/carcinomas	general population	0.0338	0.044	[169]	
Reference Dose (RfD) or Equivalent	0.0003	mg/kg/day	PPRTV 2013	Lee et al. 1976	increased incidence of splenic extramedullary hematopoiesis	general population	0.0338	2	[248]	
Cancer Slope Factor (CSF)	1.5	$(mg/kg/day)^{-1}$	PPRTV 2013	Leonard et al. 1987	hepatocellular carcinomas	general population	0.0338	0.02	[248]	
Reference Dose (RfD) or Equivalent	0.004	mg/kg/day	ATSDR 2016	U.S. Army 1976	mild extramedullary erythropoiesis in the spleen	general population	0.0338	20	[26]	Note: Intermediate oral MRL based on a dog study of 13-week exposure duration (<10% of lifetime).
Reference Dose (RfD) or Equivalent	0.001	mg/kg/day	OW 2008	Lee et al. 1976	neurotoxicity, Heinz bodies, bile duct hyperplasia, liver and kidney histopathology,	general population	0.0338	6	[223]	
Cancer Slope Factor (CSF)	0.667	$(mg/kg/day)^{-1}$	OW 2008	Ellis et al. 1979; Lee et al. 1985	hepatocellular carcinomas and neoplastic nodules; mammary gland adenomas, fibroadenomas, fibromas, and adenocarcinomas/carcinomas	general population	0.0338	0.0444	[223]	
Cancer Classification (CC)	B2		IRIS 1990						[169]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data
Cancer Classification (CC)	S		PPRTV 2013						[248]	S = Suggestive evidence for carcinogenicity
Cancer Classification (CC)	L		OW 2008						[223]	Note: cancer classification based on a mixture of 2,4- and 2,6-Dinitrotoluene. L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic, Systemic	20	Imamura, 2015				2/1/2015	2/13/2020	31	1	0	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.04	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.09	mg/kg/day	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.004	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.00005	mg/l	EPA DWSHA 2018	
Provisional Subchronic RfD	0.003	mg/kg/day	EPA PPRTV	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	177	mg/kg	NIH HSDB	min
LD50	621	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000586138	mol/kg	TEST QSAR	
Ames mutagenicity test	0.613	no units	TEST QSAR	
Developmental toxin test	0.44	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

2,6-Dinitrotoluene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,873	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	5	496

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	37	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	157	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,999	10	Sites	0.5	0.1	5	19.6	250	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000315	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.07973	days	
Boiling point	OPERA QSAR	299.957	degree C	
Boiling point	TEST QSAR	303.476	degree C	
Vapor pressure	OPERA QSAR	0.000563793	mmHg	
Vapor pressure	TEST QSAR	0.000429536	mmHg	
Solubility in water	OPERA QSAR	191347.3883	µg/L	
Solubility in water	TEST QSAR	287337.9974	µg/L	
Bioconcentration factor	OPERA QSAR	21.5928	no units	
Bioconcentration factor	TEST QSAR	6.20869	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	362.445	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.09847	no units	
Henry's Law constant	OPERA QSAR	0.000000117	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2,6-Dinitrotoluene
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
26	ATSDR. 2016. Toxicological Profile for Dinitrotoluenes. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
62	Ellis, H.V., J.H. Hagensen, J.R. Hodgson, et al. 1979. Mammalian toxicity of munitions compounds. Phase BI: Effects of lifetime exposure. Part I. 2,4-Dinitrotoluene. Final Report No. 7. Kansas City, MO: Midwest Research Institute. Contract No. DAMD 17-74-C-4073, ADA077 692.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
169	USEPA. 1990. Chemical Assessment Summary, 2,4-/2,6-Dinitrotoluene mixture. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
223	USEPA. 2008. Drinking Water Health Advisory for 2,4-Dinitrotoluene and 2,6-Dinitrotoluene. U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
248	USEPA. 2013. Provisional Peer-Reviewed Toxicity Values for 2,6-Dinitrotoluene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

2-Hydroxyatrazine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2-Hydroxyatrazine
CASRN:	2163-68-0
DTXSID:	DTXSID6037807
Use:	Pesticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00050

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	400	histopathological lesions of the kidney	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.2	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2-Hydroxyatrazine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0676	mg/kg/day	OPP 2018	Chow and Hart 1995	histopathological lesions of the kidney	general population	0.0338	400	[289]	NOTE: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Drinking Water Guideline Value	0.2	mg/l	WHO Drinking Water Quality Guidelines	
Health-Based Screening Level	0.06	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	125	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	7.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.962	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	125	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	18.89	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	247.7	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	247.7	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	5.8	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00918333	mol/kg	TEST QSAR	
Ames mutagenicity test	0.145	no units	TEST QSAR	
Developmental toxin test	0.902	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

2-Hydroxyatrazine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,230	798	Sites	19	0.00052	0.0396	0.2	4.6	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	11	Sites	21	0.002	0.0775	0.194	0.304	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.051	0.106	0.135	0.14	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	9	Sites	90	0.002	0.015	0.12	0.74	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,128	1015	Sites	20	4e-04	0.045	0.242	34.8	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	153	Sites	70	0.001998	0.0238	0.0629	0.255	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	9	Sites	90	0.002	0.023	0.26	1.2	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	119	19	Sites	16	0.007	0.015	0.282	0.368	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	19	Sites	50	0.0055	0.0344	0.229	0.543	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	57	Sites	8	8e-04	0.0103	0.0514	0.466	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	11	Samples	9				0.042	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000115	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.64287	days	
Boiling point	OPERA QSAR	332.835	degree C	
Boiling point	TEST QSAR	326.232	degree C	
Vapor pressure	OPERA QSAR	1.1E-10	mmHg	
Vapor pressure	TEST QSAR	8.95E-08	mmHg	
Solubility in water	OPERA QSAR	6.00E+03	µg/L	
Solubility in water	TEST QSAR	2009087.288	µg/L	
Bioconcentration factor	OPERA QSAR	5.81501	no units	
Bioconcentration factor	TEST QSAR	3.22107	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	213.153	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.2088	no units	
Henry's Law constant	OPERA QSAR	9.58E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2-Hydroxyatrazine
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
289	USEPA. 2018. Atrazine. Draft Human Health Risk Assessment for Registration Review. EPQ-HQ-OPP-2013-0266-1159. DP No. D418316. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

2-Methylnaphthalene

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	2-Methylnaphthalene
CASRN:	91-57-6
DTXSID:	DTXSID4020878
Use:	Insecticide; small quantities for the production of alkylmethylnaphthalene sulfonates as textile auxiliaries, surfactants, and emulsifiers.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0031

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	20	pulmonary alveolar proteinosis	general population	IRIS 2003

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.061	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

2-Methylnaphthalene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.004	mg/kg/day	IRIS 2003	Murata et al. 1997	pulmonary alveolar proteinosis	general population	0.0338	20	[202]	
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	ATSDR 2005	Murata et al. 1997	pulmonary alveolar proteinosis	general population	0.0338	200	[13]	Chronic oral MRL that was derived from a BMDL05 with a total uncertainty factor of 100 (10 for mouse to human extrapolation and 10 for human variability).
Cancer Classification (CC)	I		IRIS 2003						[202]	I = Inadequate evidence to determine carcinogenic potential
Reference Dose (RfD) or Equivalent			PPRTV 2007						[218]	chronic oral RfD not derived because there is an available IRIS RfD
Cancer Classification (CC)	I		PPRTV 2007						[218]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2006	3/25/2020	71	0	0	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.008	mg/l	MN DOH	
Provisional Subchronic RfD	0.004	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1630	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00944061	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.514	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

2-Methylnaphthalene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	565	9	Sites	1.59	0.004	0.0165	0.061	0.16	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	2088143

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	1	Sites	2	0.034	0.034	0.034	0.034	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,662	411	Sites	11	0.001	0.02	5.41	21000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0		ND			µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0076	0.00875	0.00967	0.0099	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	16	Sites	76	0.018	0.034	0.115	0.473	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00012	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	14.0244	days	
Boiling point	OPERA QSAR	241.223	degree C	
Boiling point	TEST QSAR	246.201	degree C	
Vapor pressure	OPERA QSAR	0.0538992	mmHg	
Vapor pressure	TEST QSAR	0.0272898	mmHg	
Solubility in water	OPERA QSAR	24552.14026	µg/L	
Solubility in water	TEST QSAR	18789.01813	µg/L	
Bioconcentration factor	OPERA QSAR	74.4505	no units	
Bioconcentration factor	TEST QSAR	358.922	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3960.56	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.86167	no units	
Henry's Law constant	OPERA QSAR	0.000518286	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

2-Methylnaphthalene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
13	ATSDR. 2005. Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
202	USEPA. 2003. Chemical Assessment Summary, 2-Methylnaphthalene. U.S. Environmental Protection Agency, National Center for Environmental Protection, Integrated Risk Information System (IRIS), Washington, D.C.
218	USEPA. 2007. Provisional Peer-Reviewed Toxicity Values for 2-Methylnaphthalene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

4-tert-Octylphenol

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	4-tert-Octylphenol
CASRN:	140-66-9
DTXSID:	DTXSID9022360
Use:	Used in nonionic surfactants, plasticizers, antioxidants, fuel oil stabilizer, intermediate for resins, fungicides, bactericides, dyestuffs, adhesives, rubber chemicals
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0015

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	71	decreased uterine weight, decreased pup body weight, increased time to preputial separation, decreased adult body weight; female reproductive system	all infants	MDH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.108	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

4-tert-Octylphenol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.051	mg/kg/day	MDH 2023	Tyl et al. 1999	decreased uterine weight, decreased pup body weight, increased time to preputial separation, decreased adult body weight; female reproductive system	all infants	0.143	71	[110]	In November 2023, the guidance values were adopted into Minnesota Rules, 4717.7860, as Health Risk Limits (HRLs)

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive	0.0000275	Blake, 2004	Systemic	450	Bian, 2006	Not date limited	4/7/2020	538	17	6	12

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	min
LD50	3210	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	44	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00701455	mol/kg	TEST QSAR	
Ames mutagenicity test	0.049	no units	TEST QSAR	
Developmental toxin test	0.75	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 3 - >= 0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

4-tert-Octylphenol
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	560	36	Sites	6.43	0.01	0.04	0.108	0.59	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	1	Sites	2	0.01	0.01	0.01	0.01	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,199	235	Sites	7.3	0.01	0.1	0.202	42.6	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	8	Sites	21	0.0204	0.0374	0.286	0.355	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	0	Samples	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	16	Sites	76	0.041	0.086	0.188	0.251	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	14	Sites	67	0.1	0.19	0.223	0.23	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000968	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	0.2	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.08303	days	
Boiling point	OPERA QSAR	263.348	degree C	
Boiling point	TEST QSAR	293.064	degree C	
Vapor pressure	OPERA QSAR	0.000486421	mmHg	
Vapor pressure	TEST QSAR	0.00156315	mmHg	
Solubility in water	OPERA QSAR	3495.45	µg/L	
Solubility in water	TEST QSAR	5290.473432	µg/L	
Bioconcentration factor	OPERA QSAR	289.068	no units	
Bioconcentration factor	TEST QSAR	139.637	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2453.64	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.86708	no units	
Henry's Law constant	OPERA QSAR	0.0000079	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

4-tert-Octylphenol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
110	MDH. 2023. Toxicological Summary for: 4-tert-Octylphenol. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

5-Methyl-1H-benzotriazole

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	5-Methyl-1H-benzotriazole
CASRN:	136-85-6
DTXSID:	DTXSID1038743
Use:	Corrosion inhibitors; transformation products
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.022

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	9	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	32	Reduced offspring body weight	all infants	MDH 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.716	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

5-Methyl-1H-benzotriazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.017	mg/kg/day	MDH 2019	JBRC 2007	renal proximal tubule regeneration	general population	0.0338	100	[109]	Note: this RfD equivalent was derived from a surrogate chemical (1H-benzotriazole) and may not apply UFs using the same methods as EPA guidance
Reference Dose (RfD) or Equivalent	0.023	mg/kg/day	MDH 2019	JBRC 2007	Reduced offspring body weight	all infants	0.143	32	[109]	Note: this RfD equivalent was derived from a surrogate chemical (1H-benzotriazole) and may not apply UFs using the same methods as EPA guidance. MDH derives a chronic RfD but notes that the acute/subchronic RfD based on developmental effects results in more protective guidance values. Consistent with agency guidance, OW considers an RfD based on developmental effects to be applicable to chronic exposure scenarios and used this RfD as the basis for the HRL.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						Unlimited	8/9/2024	58	0	1	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.02	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.02	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00654636	mol/kg	TEST QSAR	
Ames mutagenicity test	0.713	no units	TEST QSAR	
Developmental toxin test	0.355	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

5-Methyl-1H-benzotriazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	563	27	Sites	4.8	0.03	0.15	0.716	2.8	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	48	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	16		0.134		0.247	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,203	294	Sites	9.18	0.02	0.46	19.2	6600	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	44		0.27		1.2	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	12	Sites	32	0.228	0.494	0.886	0.921	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	15	Sites	71	0.185	0.433	1	1.78	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	12	Sites	57	0.9	2.05	4.51	5.2	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000309	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	2.53108	days	
Boiling point	OPERA QSAR	308.765	degree C	
Boiling point	TEST QSAR	329.782	degree C	
Vapor pressure	OPERA QSAR	0.000046	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	5897883.33	µg/L	
Solubility in water	TEST QSAR	2840228.082	µg/L	
Bioconcentration factor	OPERA QSAR	3.26196	no units	
Bioconcentration factor	TEST QSAR	8.93305	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	62.7414	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.02688	no units	
Henry's Law constant	OPERA QSAR	2.48E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

5-Methyl-1H-benzotriazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
109	MDH. 2019. Toxicological Summary for: Tolyltriazole and 5-Methyl-1H-Benzotriazole. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

6-Acetyl-1,1,2,4,4,7-hexamethyltetralin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	6-Acetyl-1,1,2,4,4,7-hexamethyltetralin
CASRN:	21145-77-7
DTXSID:	DTXSID7041544
Use:	Used as fragrance for cosmetics, detergents, fabric softeners, household cleaning products, and air fresheners
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0036

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	22	Effects on various biochemical liver parameters including increased A/G ratio, reductions in plasma glucose, cholesterol, and plasma triglyceride	general population	MDH 2013

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0786	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

6-Acetyl-1,1,2,4,4,7-hexamethyltetralin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0037	mg/kg/day	MDH 2013	Api et al. 2004	Effects on various biochemical liver parameters including increased A/G ratio, reductions in plasma glucose, cholesterol, and plasma triglyceride	general population	0.0338	22	[116]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Cardiovascular, Hematologic, Systemic	5	Api, 2004; Christian, 1999	Developmental, Endocrine, Gastrointestinal, Metabolic, Neurological, Ocular, Renal, Reproductive, Respiratory, Urinary	50	Api, 2004; Christian, 1999	Unlimited	8/27/2024	333	2	2	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.03	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	570	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	21	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00295801	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.035	no units	TEST QSAR	
Developmental toxin test	0.707	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

6-Acetyl-1,1,2,4,4,7-hexamethyltetralin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	567	31	Sites	5.47	0.004	0.032	0.0786	0.52	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	3	Sites	6	0.006	0.013	0.037	0.055	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	1	Sites	14	0.009	0.009	0.009	0.009	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,221	417	Sites	13	0.001	0.026	0.11	1.52	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	13	Sites	34	0.0151	0.046	0.0898	0.11	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	2	Sites	9.52	0.016	0.023	0.031	0.033	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	21	Sites	100	0.048	0.105	0.175	0.36	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000261	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.37811	days	
Boiling point	OPERA QSAR	324.434	degree C	
Boiling point	TEST QSAR	323.052	degree C	
Vapor pressure	OPERA QSAR	0.0000402	mmHg	
Vapor pressure	TEST QSAR	0.0000431	mmHg	
Solubility in water	OPERA QSAR	998.63236	µg/L	
Solubility in water	TEST QSAR	1019.26526	µg/L	
Bioconcentration factor	OPERA QSAR	2488.98	no units	
Bioconcentration factor	TEST QSAR	629.506	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2926.36	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.69897	no units	
Henry's Law constant	OPERA QSAR	0.0000481	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

6-Acetyl-1,1,2,4,4,7-hexamethyltetralin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
116	Minnesota Dept. of Health. 2013. Toxicological Summary for 6-Acetyl-1,1,2,4,4,7 hexamethyltetraline: CAS: 21145-77-7 or 1506-02-1. Health Risk Assessment Unit, Environmental Health Division; 651-201-489; adopted as Rule: September 30, 2013.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

6-Chloro-1,3,5-triazine-2,4-diamine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	6-Chloro-1,3,5-triazine-2,4-diamine
CASRN:	3397-62-4
DTXSID:	DTXSID1037806
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00075

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	430	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.323	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

6-Chloro-1,3,5-triazine-2,4-diamine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.076	mg/kg/day	OPP 2018	Cooper et al. 2010	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	0.0354	430	[288]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL." RfD is a 4-day PAD and no cPAD was derived because "Currently available toxicity data indicate that a 4-day exposure is sufficient to elicit a decrease of the LH surge in rats, Therefore, for the purposes of the residential risk assessments, only the 4-day duration is relevant; the 4-day assessment will be protective for longer durations of exposure."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.01	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.003	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.001	mg/l	MN DOH	Chronic value based on cyanazine
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	Chronic value based on atrazine
Health-Based Screening Level	0.012	mg/l	Health-based screening levels from USGS	
Maximum Allowable Daily Level	100	ug/day	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.003	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	150	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	150	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	40.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	7.6	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	0.7	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	40.2	mg/kg/day	EPA Toxicity Reference Database	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00623735	mol/kg	TEST QSAR	
Ames mutagenicity test	0.176	no units	TEST QSAR	
Developmental toxin test	0.628	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

6-Chloro-1,3,5-triazine-2,4-diamine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,639	638	Sites	17.5	0.0012	0.0921	0.323	6.68	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	17	1	Sites	6	0.07	0.07	0.07	0.07	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	3	Sites	30	0.025	0.05	0.05	0.05	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,745	908	Sites	24	0.0032	0.117	0.45	6.3	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	73	Sites	33	0.015	0.0865	0.457	2.9	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	3	Sites	30	0.025	0.05	0.05	0.12	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	93	2	Sites	2	0.132	0.159	0.311	0.672	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	7	Sites	18	0.027	0.074	0.122	0.17	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	86	Sites	15	0.0012	0.132	1.28	6.3	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000429	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	8.35163	days	
Boiling point	OPERA QSAR	317.069	degree C	
Boiling point	TEST QSAR	277.429	degree C	
Vapor pressure	OPERA QSAR	7.03E-09	mmHg	
Vapor pressure	TEST QSAR	0.00000585	mmHg	
Solubility in water	OPERA QSAR	605757.2675	µg/L	
Solubility in water	TEST QSAR	4405667.505	µg/L	
Bioconcentration factor	OPERA QSAR	2.87547	no units	
Bioconcentration factor	TEST QSAR	1.65577	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	32.1556	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.412903	no units	
Henry's Law constant	OPERA QSAR	0.000000112	atm-m^3/mol	

6-Chloro-1,3,5-triazine-2,4-diamine

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
288	USEPA. 2018. Atrazine. Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D418316
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Acephate

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acephate
CASRN:	30560-19-1
DTXSID:	DTXSID8023846
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.053

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	reproductive and developmental effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	4	Inhibition of brain AChE in male pups on PND 11.	all infants	OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.213	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acephate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.003	mg/kg/day	OPP 2023	MRID 46151801	Inhibition of brain AChE in male pups on PND 11.	all infants	0.143	4	[379]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL." Steady-state PAD selected because repeated exposure does not result in increased AChE inhibition.
Cancer Classification (CC)	C		OPP 2023						[379]	C= Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.002	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0003	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.0077	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	233	mg/kg	NIH HSDB	min
LD50	945	mg/kg	NIH HSDB	max
LOAEL	0.27	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	167	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.27	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	167	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.12	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	0.15	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.12	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	0.15	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00199986	mol/kg	TEST QSAR	
Ames mutagenicity test	0.202	no units	TEST QSAR	
Developmental toxin test	0.743	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Acephate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,256	147	Sites	6.52	0.00051	0.0271	0.213	10.4	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	29	12908335	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	36,231

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	3	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,750	82	Sites	5	0.00072	0.0209	0.183	19	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	27	9	Sites	33	0.267	0.47	2.9	13.5	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000019	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.55577	days	
Boiling point	OPERA QSAR	286.783	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000171	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	803405697.6	µg/L	
Solubility in water	TEST QSAR	74787708.04	µg/L	
Bioconcentration factor	OPERA QSAR	1.22245	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2.01033	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.848194	no units	
Henry's Law constant	OPERA QSAR	4.94E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acephate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
379	USEPA. 2023. Acephate: Second Revised Draft Human Health Risk Assessment (DRA) in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D463758
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Acetamiprid

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acetamiprid
CASRN:	135410-20-7
DTXSID:	DTXSID0034300
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.42

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	420	reduced body weight and body weight gain in females, hepatocellular vacuolation in males	general population	OPP 2017; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
175		EDWC, GW (chronic)	OPP	2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acetamiprid

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.071	mg/kg/day	OPP 2017; OPP 2020	Hatch 1999	reduced body weight and body weight gain in females, hepatocellular vacuolation in males	general population	0.0338	420	[275]; [329]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). A new OPP assessment exists but does not contribute new data for the HRL.
Cancer Classification (CC)	NL		OPP 2017; OPP 2020						[275]; [329]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.1	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.45	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	146	mg/kg	NIH HSDB	min
LD50	217	mg/kg	NIH HSDB	max
LOAEL	17.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	214.6	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	214.6	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	7.1	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1246.6	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	28	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	12.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1246.6	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00283139	mol/kg	TEST QSAR	
Ames mutagenicity test	0.819	no units	TEST QSAR	
Developmental toxin test	0.6	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Acetamiprid
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4	2	Sites	50	0.0025	0.004	0.03	0.0456	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	36	147139	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	373	8	Sites	2	0.0023	0.0122	0.126	0.227	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	292	69	Sites	24	0.00211	0.104	1.17	75.9	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0395	0.0395	0.0395	0.0395	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater (chronic)	2020	OPP	175	µg/L	Pesticide in Water Calculator (PWC), v1.52	The modeled groundwater chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence value for acetamiprid. This value coincides with the chronic critical health effect of decreased body weight provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000599	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.64121	days	
Boiling point	OPERA QSAR	314.331	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000092	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	3770261.884	µg/L	
Solubility in water	TEST QSAR	11007317.35	µg/L	
Bioconcentration factor	OPERA QSAR	14.029	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	120.043	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.83414	no units	
Henry's Law constant	OPERA QSAR	3.4E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acetamiprid

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
275	USEPA. 2017. Acetamiprid. Acute and Chronic Dietary Exposure and Risk Assessment for Registration Review. EPA-HQ-OPP-2012-0329-0022. DP No. D443740. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
329	USEPA. 2020. Acetamiprid. Human Health Risk Assessment for Proposed Use on Tropical and Subtropical, Medium to Large Fruit, Smooth, Inedible Peel Subgroup 24B; Greenhouse-grown Peppers; and Crop Group Conversions and Expansions.U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Acetochlor

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acetochlor
CASRN:	34256-82-1
DTXSID:	DTXSID8023848
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0049

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	elevated serum levels of ornithine transcarbamylase, kidney lesions (interstitial nephritis, chronic vasculitis), epididymides hypospermia and testicular tubular degeneration in males	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.493	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination for acetochlor in RD 4 (2021). The EPA identified that acetochlor may cause adverse health effects in humans but did not appear to occur in public water systems at levels of public health concern based on, among other data, the following:
- No detections above the RD 4 HRL in UCMR 1 monitoring
- No detections above the RD 4 HRL in UCMR 2 monitoring
- RD 4 HRL = 100 µg/L

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acetochlor

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	OPP 2020	MRID: 41565118	elevated serum levels of ornithine transcarbamylase, kidney lesions (interstitial nephritis, chronic vasculitis), epididymides hypospermia and testicular tubular degeneration in males	general population	0.0338	100	[330]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	S		OPP 2020						[330]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.03	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Health-Based Screening Level	0.1	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.03	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2953	mg/kg	NIH HSDB	max
LD50	600	mg/kg	NIH HSDB	min
LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	600	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	600	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	23	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	161.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	191.9	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	18.7	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	191.9	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00390841	mol/kg	TEST QSAR	
Ames mutagenicity test	0.459	no units	TEST QSAR	
Developmental toxin test	0.644	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Acetochlor

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	0	Sites	0	ND	ND	ND	ND	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,869	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,236	463	Sites	5	6e-04	0.0351	0.493	215	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	46	61096163	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	1	Sites	2	0.008	0.026	0.0712	0.14	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	45	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	2	Sites	9	0.005	0.01	0.172	0.19	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.0153	0.032	0.114	0.357	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.03	0.03	0.03	0.03	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.005	0.0085	0.0097	0.01	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	217	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	13,223	1010	Sites	8	0.00055	0.039	0.546	137	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	33	Sites	15	0.014	0.0253	0.0339	0.635	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.0153	0.039	0.18	0.669	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	16	0.0167	0.0491	1.36	1.85	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	6	Sites	0.87	0.0011	0.0085	0.0144	0.0158	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.011	0.026	0.103	0.146	µg/L	
STEWARDS/Agricultural Research Service (ARS) - USDA (Ambient)	2000 - 2015	8	8	Sites	100	0.2	0.5	3	22.3	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	15	4	Sites	27	0.0242	0.0899	0.331	0.34201	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.73E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.88397	days	
Boiling point	OPERA QSAR	299.538	degree C	
Boiling point	TEST QSAR	338.331	degree C	
Vapor pressure	OPERA QSAR	0.0000154	mmHg	
Vapor pressure	TEST QSAR	0.000007	mmHg	
Solubility in water	OPERA QSAR	241000.3784	µg/L	
Solubility in water	TEST QSAR	214779.8134	µg/L	
Bioconcentration factor	OPERA QSAR	59.6099	no units	
Bioconcentration factor	TEST QSAR	18.578	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	209.152	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.03176	no units	
Henry's Law constant	OPERA QSAR	9.95E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acetochlor

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
330	USEPA. 2020. Acetochlor. Human Health Draft Risk Assessment to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.

Acetochlor ESA

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acetochlor ESA
CASRN:	187022-11-3
DTXSID:	DTXSID6037483
Use:	Pesticide degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0036

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	3	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	330	decreased body weight and weight gain, decreased food utilization; increased TSH, T4, and T3; increased relative testes weight	general population	MDH 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.19	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acetochlor ESA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.056	mg/kg/day	MDH 2018	Lees 2000	decreased body weight and weight gain, decreased food utilization; increased TSH, T4, and T3; increased relative testes weight	general population	0.0338	330	[107]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.5	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.3	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.5	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.011695	mol/kg	TEST QSAR	
Ames mutagenicity test	0.55	no units	TEST QSAR	
Developmental toxin test	1.155	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Acetochlor ESA

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	2	Sites	0.17	1.10526	1.15	1.19	1.2	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,101	249	Sites	8	0.012	0.302	1.04	13.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.05	0.14	0.25	0.31	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	1	Sites	50	0.05	0.155	0.525	0.63	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.0027	0.039	0.484	1.2	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.05	0.09	0.106	0.11	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,322	549	Sites	17	0.017	0.239	1.1	11	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	148	Sites	68	0.002664	0.0654	0.161	1.75	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.0027	0.059	0.579	1.9	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	9	Sites	24	0.02	0.06	0.566	0.67	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	23	Sites	4	0.038	0.178	0.481	0.695	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000142	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.28771	days	
Boiling point	OPERA QSAR	314.612	degree C	
Boiling point	TEST QSAR	382.116	degree C	
Vapor pressure	OPERA QSAR	4.85E-08	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	22342055.35	µg/L	
Solubility in water	TEST QSAR	2348735.782	µg/L	
Bioconcentration factor	OPERA QSAR	9.72568	no units	
Bioconcentration factor	TEST QSAR	7.31139	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	298.449	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.39897	no units	
Henry's Law constant	OPERA QSAR	5.54E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acetochlor ESA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
107	MDH. 2018. Toxicological Summary for: Acetochlor ESA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.

Acetochlor OA

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acetochlor OA
CASRN:	194992-44-4
DTXSID:	DTXSID1037484
Use:	Pesticide degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0076

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	110	decreased body weight, body weight gain, and food utilization; decreased thyroid stimulating hormone	general population	MDH 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.834	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acetochlor OA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.019	mg/kg/day	MDH 2018	Albin and Kraus 2000; Williams 2000	decreased body weight, body weight gain, and food utilization; decreased thyroid stimulating hormone	general population	0.0338	110	[108]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.09	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00986279	mol/kg	TEST QSAR	
Ames mutagenicity test	0.261	no units	TEST QSAR	
Developmental toxin test	0.88	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Acetochlor OA

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	0	Sites	0	ND	ND	ND	ND	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,110	218	Sites	7	0.0021	0.176	0.834	15.4	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.03	0.09	0.32	0.4	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	1	Sites	50	0.08	0.135	0.709	0.8	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.00113	0.048	0.615	1.3	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.02	0.17	0.186	0.19	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,329	541	Sites	16	0.0061	0.2	1	14	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	122	Sites	56	0.002331	0.0544	0.0986	1.03	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.00113	0.0705	0.82	1.9	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	16	0.03	0.075	0.54	0.56	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	6	Sites	1	0.103	0.172	0.438	0.628	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000174	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.46747	days	
Boiling point	OPERA QSAR	314.694	degree C	
Boiling point	TEST QSAR	367.714	degree C	
Vapor pressure	OPERA QSAR	4.73E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000653	mmHg	
Solubility in water	OPERA QSAR	2086965.697	µg/L	
Solubility in water	TEST QSAR	766923.4201	µg/L	
Bioconcentration factor	OPERA QSAR	2.91632	no units	
Bioconcentration factor	TEST QSAR	1.2331	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	60.4914	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.60615	no units	
Henry's Law constant	OPERA QSAR	1.2E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acetochlor OA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
108	MDH. 2018. Toxicological Summary for: Acetochlor OXA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.

Acetone

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acetone
CASRN:	67-64-1
DTXSID:	DTXSID8021482
Use:	Intermediate and solvent or cleaner (gum waxes, resins, fats, greases, oils, dyes, cellulosics, coatings, plastics, and varnishes)
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0027

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	9	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	4000	anemia with decreased reticulocyte count	general population	ATSDR 2022

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
10.8	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acetone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.9	mg/kg/day	IRIS 2003	Dietz et al. 1991; NTP 1991	nephropathy	general population	0.0338	5000	[203]	Note: The oral RfD is based off a subchronic drinking water study in rats; however, the RfD invoked an uncertainty factor to account for a subchronic to chronic extrapolation.
Reference Dose (RfD) or Equivalent	0.6	mg/kg/day	ATSDR 2022	Dietz et al. 1991; NTP 1991	anemia with decreased reticulocyte count	general population	0.0338	4000	[33]	Note: The RfD equivalent (MRL) is based off an intermediate duration study of 13 weeks. The assessment stated that a "chronic-duration oral MRL was not derived for acetone because no chronic-duration oral exposure studies were identified".
Cancer Classification (CC)			IRIS 2003						[203]	Note: The assessment states that "data are inadequate for an assessment of the human carcinogenic potential of acetone." However, the previous IRIS assessment in 1986 classified acetone as Group D.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute inhalation Minimal Risk Level (MRL)	8	ppm	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	5	mg/l	MN DOH	
Acute/Short-term Health-Based Guidance Value	9	mg/l	MN DOH	No longer on MN DOH site
Chronic Health-Based Guidance Value	3	mg/l	MN DOH	
Chronic Health-Based Guidance Value	4	mg/l	MN DOH	No longer on MN DOH site
Intermediate Minimal Risk Level (MRL)	0.6	mg/kg/day	CDC ATSDR	
Subchronic Health-Based Guidance Value	5	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	8	mg/l	MN DOH	No longer on MN DOH site

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3000	mg/kg	NIH HSDB	min
LD50	9800	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0626614	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.029	no units	TEST QSAR	
Developmental toxin test	0.462	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Acetone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,567	180	Sites	3.94	0.6	3	10.8	1810	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	7	Sites	12	1.4	2.9	5.1	20.2	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	4	3	Sites	75	2.1	3.2	5	5.1	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,783	586	Sites	12	0.3	2.5	21.5	9500	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	24	Sites	63	0.7057	1.76	6.42	10.07	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	158	1	Sites	0.63	8.3	8.3	8.3	8.3	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000409	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.56577	days	
Boiling point	OPERA QSAR	55.6196	degree C	
Boiling point	TEST QSAR	41.374	degree C	
Vapor pressure	OPERA QSAR	232.69	mmHg	
Vapor pressure	TEST QSAR	250.035	mmHg	
Solubility in water	OPERA QSAR	991024848	µg/L	
Solubility in water	TEST QSAR	326607652.8	µg/L	
Bioconcentration factor	OPERA QSAR	1.99247	no units	
Bioconcentration factor	TEST QSAR	1.91426	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3.6548	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.23752	no units	
Henry's Law constant	OPERA QSAR	0.0000353	atm-m^3/mol	

Acetone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
33	ATSDR. 2022. Toxicological Profile for Acetone. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
203	USEPA. 2003. Chemical Assessment Summary, Acetone; CASRN 67-64-1. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

Acrylonitrile

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Acrylonitrile
CASRN:	107-13-1
DTXSID:	DTXSID5020029
Use:	Used in the manufacture of acrylic and modacrylic fibers; raw material in the manufacture of plastics
Chemical Notes:	Canceled pesticide. Last end of use date: 12/31/1987.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	15

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.055	brain and spinal cord astrocytomas, Zymbal gland carcinomas and stomach papillomas/carcinomas (all in rats)	general population	IRIS 1991

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.831	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Acrylonitrile

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Cancer Slope Factor (CSF)	0.54	$(mg/kg/day)^{-1}$	IRIS 1991	Biodynamics 1980a; Biodynamics 1980b; Quast et al. 1980a	brain and spinal cord astrocytomas, Zymbal gland carcinomas and stomach papillomas/carcinomas (all in rats)	general population	0.0338	0.055	[175]	Note: Carcinogenicity assessment last revised in 1987. This CSF is a geometric mean of the three studies. A RfC, but not RfD, was also determined in this assessment.
Cancer Classification (CC)	B1		IRIS 1991						[175]	Note: Carcinogenicity assessment last revised in 1987. B1 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with limited human evidence (i.e., indicative of a possible causal relationship, but not exclusive of alternative explanations).

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hematological	0.09	Johannsen and Levinskas, 2002a	Reproductive, Developmental, Neoplasms	76	Friedman and Beliles, 2002	11/1/1990	1/16/2025	1193	33	75	15

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.09	mg/kg/day	CDC ATSDR	
Cancer Slope Factor (CSF)	1	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Human Health Ambient Water Quality Criteria	0.000061	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.000068	$(\mu g/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.00029	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Inhalation Minimal Risk Level (MRL)	0.0009	mg/l	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.02	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.00006	mg/l	EPA DWSHA 2018	
Reference Concentration (RfC)	0.002	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	5	$\mu g/m^3$	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	27	mg/kg	NIH HSDB	min
LD50	93	mg/kg	NIH HSDB	max
LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
TD50	119	mg/kg/day	NIH CPDB	max
TD50	4.21	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000787046	mol/kg	TEST QSAR	
Ames mutagenicity test	0.226	no units	TEST QSAR	
Developmental toxin test	0.642	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Acrylonitrile
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,599	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	25	7,761,801

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,051	2	Sites	0.03	0.21	0.555	0.831	0.9	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	158	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000189	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.6819	days	
Boiling point	OPERA QSAR	77.4294	degree C	
Boiling point	TEST QSAR	107.213	degree C	
Vapor pressure	OPERA QSAR	106.843	mmHg	
Vapor pressure	TEST QSAR	76.7362	mmHg	
Solubility in water	OPERA QSAR	75024536.4	µg/L	
Solubility in water	TEST QSAR	975895.824	µg/L	
Bioconcentration factor	OPERA QSAR	4.59952	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	4.11662	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.249091	no units	
Henry's Law constant	OPERA QSAR	0.000136709	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Acrylonitrile
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
175	USEPA. 1991. Chemical Assessment Summary, Acrylonitrile. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

Alachlor ESA

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Alachlor ESA
CASRN:	142363-53-9
DTXSID:	DTXSID6037485
Use:	Pesticide degradate
Chemical Notes:	Canceled pesticide. Last end of use date: 6/30/2016.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.018

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	3	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	71	hematological effects including decreased erythrocyte count, hemolytic anemia, decreased hemoglobin, decreased hematocrit and red cells, increased MCH and MCHC, and decreased body weight and body weight gain	general population	MDH 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.26	90th Percentile	Finished Water	UCMR 2	2008-2010

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Alachlor ESA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.012	mg/kg/day	MDH 2016	Heydens et al. 1996; EPA 1998; WDHFS 2005	hematological effects including decreased erythrocyte count, hemolytic anemia, decreased hemoglobin, decreased hematocrit and red cells, increased MCH and MCHC, and decreased body weight and body weight gain	general population	0.0338	71	[106]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.05	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.011885	mol/kg	TEST QSAR	
Ames mutagenicity test	0.566	no units	TEST QSAR	
Developmental toxin test	1.193	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Alachlor ESA
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	3	Sites	0.25	1	1.2	1.26	1.3	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,031	470	Sites	16	0.016	0.15	1.1	34	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.03	0.07	0.2	0.37	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	2	Sites	100	0.02	0.03	0.07	0.07	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	11	Sites	65	0.0028	0.017	0.0989	1.443	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			0.35	0.35		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,010	859	Sites	29	0.015	0.242	1.5	39.7	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	152	Sites	69	0.0028	0.0562	0.609	4.31	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	8	Sites	67	0.0028	0.017	0.1	1.037	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	4	1	Sites	25	0.064	0.064	0.064	0.064	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			0.28	4.19		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	8	Sites	21	0.02	0.025	0.119	0.21	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	33	Sites	6	0.12	0.331	1.49	3.37	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000142	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.74447	days	
Boiling point	OPERA QSAR	314.583	degree C	
Boiling point	TEST QSAR	380.403	degree C	
Vapor pressure	OPERA QSAR	4.98E-08	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	0.0679669	mol/L	
Solubility in water	TEST QSAR	0.00360579	mol/L	
Bioconcentration factor	OPERA QSAR	9.61219	no units	
Bioconcentration factor	TEST QSAR	7.53356	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	302.308	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.27152	no units	
Henry's Law constant	OPERA QSAR	5.62E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Alachlor ESA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
106	MDH. 2016. Toxicological Summary for: Alachlor ESA and Alachlor OXA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Alachlor OA

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Alachlor OA
CASRN:	171262-17-2
DTXSID:	DTXSID1037486
Use:	Pesticide degradate
Chemical Notes:	Canceled pesticide. Last end of use date: 6/30/2016.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0042

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	71	hematological effects including decreased erythrocyte count, hemolytic anemia, decreased hemoglobin, decreased hematocrit and red cells, increased MCH and MCHC, and decreased body weight and body weight gain	general population	MDH 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.3	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Alachlor OA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.012	mg/kg/day	MDH 2016	Heydens et al. 1996; EPA 1998; WDHFS 2005	hematological effects including decreased erythrocyte count, hemolytic anemia, decreased hemoglobin, decreased hematocrit and red cells, increased MCH and MCHC, and decreased body weight and body weight gain	general population	0.0338	71	[106]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.05	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0100693	mol/kg	TEST QSAR	
Ames mutagenicity test	0.532	no units	TEST QSAR	
Developmental toxin test	0.974	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Alachlor OA
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	0	Sites	0	ND	ND	ND		ug/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,052	239	Sites	8	0.0043	0.05	0.3	36	ug/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.02	0.04	0.09	0.1	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	1	Sites	50	0.02	0.02	0.02	0.02	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.00102	0.008	0.052	0.4995	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.32	0.32	0.32	0.32	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites							
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,010	486	Sites	16	0.0043	0.06	0.26	22.9	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	92	Sites	42	0.001016	0.017	0.338	5.38	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	6	Sites	50	0.00102	0.008	0.041	0.102	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	0	Sites	0				0	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			1.85	1.85		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.02	0.02	0.02	0.02	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	11	Sites	2	0.0374	0.122	0.92	1.45	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000167	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.52146	days	
Boiling point	OPERA QSAR	314.722	degree C	
Boiling point	TEST QSAR	368.012	degree C	
Vapor pressure	OPERA QSAR	4.07E-08	mmHg	
Vapor pressure	TEST QSAR	0.00000076	mmHg	
Solubility in water	OPERA QSAR	0.0077816	mol/L	
Solubility in water	TEST QSAR	0.0033037	mol/L	
Bioconcentration factor	OPERA QSAR	2.90234	no units	
Bioconcentration factor	TEST QSAR	1.30918	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	104.706	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.60647	no units	
Henry's Law constant	OPERA QSAR	1.19E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Alachlor OA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
106	MDH. 2016. Toxicological Summary for: Alachlor ESA and Alachlor OXA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Aldrin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Aldrin
CASRN:	309-00-2
DTXSID:	DTXSID8020040
Use:	Former insecticide
Chemical Notes:	Canceled pesticide. Last end of use date: 5/15/1987.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	390

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	carcinogen with linear MOA	1	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0017	liver carcinoma	general population	OW 2003

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.667	90th Percentile	Finished Water	UCM2	1993-1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X				

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on aldrin in RD 1 (2003). The EPA identified that aldrin did not appear to occur at levels of public health concern in PWSs, and thus an NPDWR did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- Detections at 0.02% of PWSs from UCM-State Round 2 monitoring
- RD 1 HRL = 0.002 µg/L

USEPA, 2003 [204]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Aldrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00003	mg/kg/day	IRIS 1987	Fitzhugh et al. 1964	liver toxicity (lesions)	general population	0.0338	0.2	[153]	
Cancer Slope Factor (CSF)	17	$(mg/kg/day)^{-1}$	IRIS 1987	Davis, 1965; NCI, 1978	liver carcinoma	general population	0.0338	0.0017	[153]	
Reference Dose (RfD) or Equivalent	0.00003	mg/kg/day	OW 2003	Fitzhugh et al. 1964	histopathological lesions in the liver	general population	0.0338	0.2	[204]	
Cancer Slope Factor (CSF)	17	$(mg/kg/day)^{-1}$	OW 2003	Davis, 1965; NCI, 1978	liver carcinoma	general population	0.0338	0.0017	[204]	
Reference Dose (RfD) or Equivalent	0.00004	mg/kg/day	ATSDR 2022	Fitzhugh et al. 1964	increased liver weight and histological alterations in the liver	general population	0.0338	0.2	[34]	
Cancer Classification (CC)	B2		IRIS 1987						[153]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data
Cancer Classification (CC)	B2		OW 2003						[204]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data
			WHO 2003						[404]	The WHO reported a combined provisional tolerable daily intake of 0.0001 mg/kg/day for a combination of aldrin and dieldrin

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.0003	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.002	mg/kg/day	CDC ATSDR	
Cancer Slope Factor (CSF)	17	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Human Health Ambient Water Quality Criteria	7.7E-10	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.0049	$(\mu g/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.0049	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Lifetime Health Advisory	0.000002	mg/l	EPA DWSHA 2018	
Provisional Subchronic RfD	0.00004	mg/kg/day	EPA PPRTV	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	39	mg/kg	NIH HSDB	min
LD50	45	mg/kg	NIH HSDB	max
LOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	38	percent	EPA Chemistry Dashboard	
TD50	0.741	mg/kg/day	NIH CPDB	min
TD50	466	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000106414	mol/kg	TEST QSAR	
Ames mutagenicity test	0.166	no units	TEST QSAR	
Developmental toxin test	0.493	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Aldrin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	12,165	2	Sites	0.02	0.46	0.575	0.667	0.69	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	188	2	Sites	1	0.0012	0.0256	0.0451	0.05	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	9	1,040

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	169	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	822	1	Sites	0.12	0.011	0.011	0.011	0.011	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	660	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,551	1	Sites	0.06	0.084	0.084	0.084	0.084	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	1	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	78	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	3	1	Sites	33	0.044	0.044	0.044	0.044	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	738	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,507	39	Sites	2	0.001	0.01	0.244	2.1	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	23	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		3.28E-11	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)	<LOD	ng/g	
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	328.804	days	
Boiling point	OPERA QSAR	323.769	degree C	
Boiling point	TEST QSAR	355.96	degree C	
Vapor pressure	OPERA QSAR	0.000119472	mmHg	
Vapor pressure	TEST QSAR	0.0000577	mmHg	
Solubility in water	OPERA QSAR	7.28E-08	mol/L	
Solubility in water	TEST QSAR	0.000000117	mol/L	
Bioconcentration factor	OPERA QSAR	5507.68	no units	
Bioconcentration factor	TEST QSAR	4017.91	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	48966	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.49722	no units	
Henry's Law constant	OPERA QSAR	0.0000441	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Aldrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
34	ATSDR. 2022. Toxicological Profile for Aldrin and Dieldrin. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
70	Fitzhugh, O.G., A.A. Nelson, and M.L. Quaife. 1964. Chronic Oral Toxicity of Aldrin and Dieldrin in Rats and Dogs. Food Cosmet. Toxicol. 2:551-562.
145	USEPA, 2001. Regulatory Determination Support Document for Aldrin and Dieldrin. EPA 815 R-01-011.
153	USEPA. 1987. Chemical Assessment Summary, Aldrin. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
204	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Aldrin and Dieldrin. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.
404	WHO. 2003. Aldrin and Dieldrin in Drinking Water. Background document for development of WHO Guidelines for drinking-water quality Geneva: World Health Organization.

alpha-1,2,3,4,5,6-Hexachlorocyclohexane

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	alpha-1,2,3,4,5,6-Hexachlorocyclohexane
CASRN:	319-84-6
DTXSID:	DTXSID2020684
Use:	Component of benzene hexachloride (BHC) former insecticide
Chemical Notes:	Canceled pesticide. Last end of use date: 10/1/2009.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	5.8

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	carcinogen with linear mode of action	5	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0047	hepatic nodules and hepatocellular carcinomas	general population	IRIS 1987

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0274	90th Percentile	Finished Water	UCMR 4	2018-2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

alpha-1,2,3,4,5,6-Hexachlorocyclohexane
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0009	mg/kg/day	ATSDR 2024	Fitzhugh et al. 1950	increased liver weight and liver histopathology changes	general population	0.0338	5	[37]	
Cancer Slope Factor (CSF)	6.3	$(mg/kg/day)^{-1}$	IRIS 1987	Ito et al. 1973a	hepatic nodules and hepatocellular carcinomas	general population	0.0338	0.0047	[150]	NOTE: This compound is a byproduct of production of gamma HCH (Lindane), which is no longer registered for use as a pesticide in the US
Cancer Classification (CC)	B2		IRIS 1987						[150]	NOTE: IRIS states that "a screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the cancer assessment for alphaHexachlorocyclohexane (alpha-HCH) conducted in September 2002 did not identify any critical new studies." B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data
Reference Dose (RfD) or Equivalent			EFSA 2005						[65]	Note: No definitive RfD for the contaminant is supplied by this assessment source.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Slope Factor (CSF)	2.7	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Human Health Ambient Water Quality Criteria	0.00000036	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.00077	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Inhalation Unit Risk (IUR)	0.0018	$(\mu g/m^3)^{-1}$	EPA IRIS	
Intermediate Minimal Risk Level (MRL)	0.002	mg/kg/day	CDC ATSDR	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	177	mg/kg	NIH HSDB	min
Percent of active toxcast in vitro assays tested	10	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00127938	mol/kg	TEST QSAR	
Ames mutagenicity test	0.233	no units	TEST QSAR	
Developmental toxin test	0.229	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

alpha-1,2,3,4,5,6-Hexachlorocyclohexane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020	5,028	25	Sites	0.5	0.01	0.015	0.0274	0.16	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,552	21	Sites	0.28	4e-04	0.011	0.067	0.21	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	4	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	34	1	Sites	3	0.012	0.012	0.012	0.012	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	6	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	253	1	Sites	0.4	0.01	0.01	0.01	0.01	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,408	47	Sites	0.63	0.0011	0.036	0.156	2.7	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		2.4E-10	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	18.6094	days	
Boiling point	OPERA QSAR	236.383	degree C	
Boiling point	TEST QSAR	276.233	degree C	
Vapor pressure	OPERA QSAR	0.0000424	mmHg	
Vapor pressure	TEST QSAR	0.0106905	mmHg	
Solubility in water	OPERA QSAR	0.0000153	mol/L	
Solubility in water	TEST QSAR	0.0000484	mol/L	
Bioconcentration factor	OPERA QSAR	1100.89	no units	
Bioconcentration factor	TEST QSAR	157.761	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1479.84	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.71918	no units	
Henry's Law constant	OPERA QSAR	0.00000321	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

alpha-1,2,3,4,5,6-Hexachlorocyclohexane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
37	ATSDR. 2024. Toxicological Profile for Hexachlorocyclohexane (HCH). U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
65	European Food Safety Authority (EFSA). 2005. Opinion of the Scientific Panel On Contaminants in the Food Chain on a Request from the Commission Related to Gamma-HCH and Other Hexachlorocyclohexanes as Undesireable Substances in Animal Feed. EFSA Journal 2005; 250: 1-39.
150	USEPA. 1987. Chemical Assessment Summary alpha-Hexachlorocyclohexane (alpha-HCH); CASRN 319-84-6. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.

Aluminum

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Aluminum
CASRN:	7429-90-5
DTXSID:	DTXSID3040273
Use:	Metal
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.17

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	decline in neuromuscular parameters (i.e., foot splay, fore- and hind-limb grip strength) as well as clinical observations, clinical biochemical changes, and effects on renal pathology	general population	HC 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
346	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Aluminum

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	1	mg/kg/day	ATSDR 2008	Golub et al. 2000	decreased forelimb and hindlimb grip strength and decreased thermal sensitivity	general population	0.0338	6000	[16]	
Reference Dose (RfD) or Equivalent	0.3	mg/kg/day	HC 2021	Poirier et al. 2011	decline in neuromuscular parameters (i.e., foot splay, fore- and hind-limb grip strength) as well as clinical observations, clinical biochemical changes, and effects on renal pathology	general population	0.0338	2000	[83]	
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	CALEPA 2001	Golub et al. 1993	Increased absolute and relative spleen weights, decreased spleen cell interleukin-2, interferon-g, tumor necrosis factor-a, deficiency of CD4+ T-cell populations.	general population	0.0338	1000	[46]	
Reference Dose (RfD) or Equivalent	1	mg/kg/day	PPRTV 2006	Donald et al. 1989, Golub et al. 1995	decreased forelimb and increased hindlimb grip strengths, increased hindlimb foot splay distance	general population	0.0338	6000	[216]	Note: Provisional chronic RfD is provided.
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	WHO 2010	FAO/WHO 2007	effects from a range of studies, with potential neurotoxicity highlighted	general population	0.0338	600	[418]	Note: Provisional tolerable weekly intake of 1 mg/kg divided by 7 gives a 0.1 mg/kg/day provisional tolerable daily intake. Because of the provisional nature of this value and that a specific study was not highlighted for critical effects, I would elect to not select this as highlighted. Additionally, WHO highlights that DW facilities need to optimize their numbers even lower for treatment purposes.
Cancer Classification (CC)	I		PPRTV 2006						[216]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						3/1/2020	9/3/2024	6253	11	41	0

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Public Health Goal	0.6	mg/l	CalEPA OEHHA Public Health Goals	
Intermediate Minimal Risk Level (MRL)	1	mg/kg/day	CDC ATSDR	
Maximum Allowable Concentration (MAC)	2.9	mg/l	Canadian Drinking Water Guidelines	
Provisional Reference Concentration (RfC)	0.005	mg/m^3	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Aluminum

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	62	Sites	6	31	78	346	1771	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,331	4802	Sites	66	0.8	10	239	210000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000,000 – <20,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	40	20	Sites	50	1	7.7	72.9	380	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	23	Sites	88	3.93	15	77.2	159.8	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	96		11.1		188	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	7		Sites			65	79		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	26,782	16492	Sites	62	0.01	108	900	976000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	96		91.1		949	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	382	Sites	50	2.2	3.9	33.3	799	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	5.580668069	22.2	51.7		µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	6,670	6628	Samples	99	0.001	20	139	2300000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	1,649	680	Samples	41	1.3	538	86010	5290000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	61	59	Sites	97	54.76	1200	3700	13000	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	39	Sites	98	3000	1e+05	1114000	2530000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	6	Sites	75	11	124	518	3740	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	402	198	Samples	49	0.103333	22.3	141	782	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	38	Sites	97	0.076	110	1640	140000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Aluminum

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
16	ATSDR. 2008. Toxicological Profile for Aluminum. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
46	CALEPA. 2001. Public Health Goal for Aluminum in Drinking Water. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
83	HC. 2021. Guideline Technical Document - Aluminum. Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
216	USEPA. 2006. Provisional Peer-Reviewed Toxicity Values for Aluminum. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
418	WHO. 2010. Aluminum in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Ametryn

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ametryn
CASRN:	834-12-8
DTXSID:	DTXSID1023869
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000029

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	430	based on degenerative and inflammatory liver effects	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0125	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ametryn

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.072	mg/kg/day	OPP 2017	O'Connor 1987	based on degenerative and inflammatory liver effects	general population	0.0338	430	[276]	
Cancer Classification (CC)	S		OPP 2017						[276]	Note: Classification of "S" is based on Liver, Pancreas tumors in Sprague-Dawley CRL:COBS CD (SD)BR rats (M)(F); Kidney, Pituitary, Testes tumors in Sprague-Dawley CRL:COBS CD (SD)BR rats (M). Non-linear approach (i.e., RfD) adequately accounts for chronic toxicity and potential carcinogenicity from ametryn exposure. S = Suggestive evidence for carcinogenicity.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	9	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.06	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3170	mg/kg	NIH HSDB	max
LD50	508	mg/kg	NIH HSDB	min
LOAEL	20.9	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	146.3	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	36.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	146.3	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	7.4	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00456037	mol/kg	TEST QSAR	
Ames mutagenicity test	0.207	no units	TEST QSAR	
Developmental toxin test	0.608	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Ametryn
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,486	96	Sites	4	1e-04	0.00372	0.0125	1.05	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	3	187156	2016

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	10

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	3	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	17	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,266	253	Sites	6	2e-04	0.00459	0.07	1.08	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	19	0	Sites	0				0	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000223	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35341	days	
Boiling point	OPERA QSAR	344.987	degree C	
Boiling point	TEST QSAR	360.753	degree C	
Vapor pressure	OPERA QSAR	0.00000273	mmHg	
Vapor pressure	TEST QSAR	0.000000871	mmHg	
Solubility in water	OPERA QSAR	0.000901246	mol/L	
Solubility in water	TEST QSAR	0.00110662	mol/L	
Bioconcentration factor	OPERA QSAR	6.50732	no units	
Bioconcentration factor	TEST QSAR	5.28445	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	389.067	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.9793	no units	
Henry's Law constant	OPERA QSAR	2.34E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

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CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
276	USEPA. 2017. Ametryn - Preliminary Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2013-0249-0022. DP No. D440785. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Ammonia

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ammonia
CASRN:	7664-41-7
DTXSID:	DTXSID0023872
Use:	Chemical intermediate; defoliant; antifungal agent for produce
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.11

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100			HC 2013

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
11	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ammonia

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Cancer Classification (CC)	I		PPRTV 2005						[209]	Note: "Adequate toxicity data for derivation of provisional subchronic or chronic RfD values are not available." I = Inadequate evidence to determine carcinogenic potential
			WHO 2003						[405]	Note: "Ammonia is not of direct importance for health in the concentrations to be expected in drinking-water. A health-based guideline has therefore not been derived." No organleptic number provided.
			HC 2013					100	[89]	Note: "Based on the lack of an appropriate endpoint from the ingestion of ammonia, the lack of sufficient evidence of systemic effects in humans, as well as limited relevant studies in experimental animals, no health-based guideline can be derived for ammonia in drinking water." HRL is based on an alternative number that limits nitrification which is associated with "significant health concerns"
			OW 1992					34000	[185]	Note: "There are no suitable studies available in the literature for the derivation of a Lifetime HA for ammonia." An organoleptic level is provided of 34 mg/L.
Cancer Classification (CC)	D		OW 1992						[185]	D = Not classifiable as to human carcinogenicity
			ATSDR 2004						[10]	Note: Oral MRLs were not derived for ammonia.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (or equivalent)	0.003	mg/kg/day	Rapid Systematic Review	Zhang et al. 2018	decrease in spermatozoa concentration	general population	0.0338	20	[424]	Note: LOAEL/3000 used in place of the RfD - LOAEL obtained from rapid systematic literature review from a study rated as "deficient"

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive	10	Zhang, 2018	Renal, Immune, Systemic	50	Zhang, 2018	9/1/2015	3/25/2020	4315	5	20	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute inhalation Minimal Risk Level (MRL)	1.7	ppm	CDC ATSDR	
Chronic inhalation Minimal Risk Level (MRL)	0.1	ppm	CDC ATSDR	
Lifetime Health Advisory	30	mg/l	EPA DWSHA 2018	
Provisional Subchronic RfC	0.1	mg/m^3	EPA PPRTV	
Reference Concentration (RfC)	0.5	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	200	$\mu g/m^3$	CalEPA OEHHA Chemical Database	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	350	mg/kg	NIH HSDB	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Ammonia
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10	10	Sites	100	1	3	9	31	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	50	173,933,793

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	40,000,000,000 - 50,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	18	7	Sites	39	104	1230	1748	2020	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	48		390		790	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	13	6	Sites	46	19	160	1001	1460	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	228	215	Sites	94	1	3	11	412	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	64		50		240	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	56	40	Sites	71	10	550	5530	9770	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	7	7	Sites	100	683	3400	12600	45000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Ammonia

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
10	ATSDR. 2004. Toxicological Profile for Ammonia. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
89	Health Canada. 2013 Guideline Technical Document Ammonia. Health Canada (HC), Ottawa, Ontario, Canada.
185	USEPA. 1992. Drinking Water Health Advisories: Ammonia. U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.
209	USEPA. 2005. Provisional Peer-Reviewed Toxicity Values for Ammonia. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
405	WHO. 2003. Ammonia in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization (WHO), Geneva, Switzerland.
424	Zhang, W., Zhao, Y., Zhang, P., Hao, Y., Yu, S., Min, L., Li, L., Ma, D., Chen, L., Yi, B., Tang, X., Meng, Q., Liu, L., Wang, S., Shen, W. and Zhang, H., (2018) Decrease in male mouse fertility by hydrogen sulfide and/or ammonia can Be inheritable. Chemosphere. 194(147-157

Anthraquinone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Anthraquinone
CASRN:	84-65-1
DTXSID:	DTXSID3020095
Use:	Chemical intermediate for the production of a large number of acid and base dyes, vat dyes, disperse dyes, and reactive dyes
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.29

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.5	Based on male mouse liver combined adenoma, carcinoma, and hepatoblastoma tumor rates.	general population	OPP 2022

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.145	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Anthraquinone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	OPP 2022	MRID 48370301	decreased body weight in females, kidney histopathological effects, including hyaline droplet accumulation, nephropathy, pigmentation, renal tubular hyperplasia, and mineralization of medulla in females and mineralization of medulla in males, as well as several liver histopathological effects, including cystic degeneration, inflammation, and eosinophilic and mixed-cell foci in both sexes, and cytoplasmic vacuolization in males	general population	0.0338	200	[374]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL."
Cancer Slope Factor (CSF)	0.06	$(mg/kg/day)^{-1}$	OPP 2022	Brunsman 2013	Based on male mouse liver combined adenoma, carcinoma, and hepatoblastoma tumor rates.	general population	0.0338	0.5	[374]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL."
Cancer Classification (CC)	L		OPP 2022						[374]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Immune, Renal	3.2	Dodd, 2013	Whole Body, Hepatic	3.2	Dodd, 2013	2/1/2010	1/15/2020	847	1	1	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Provisional Subchronic RfD	0.01	mg/kg/day	EPA PPRTV	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP	SE = Some evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0150314	mol/kg	TEST QSAR	
Ames mutagenicity test	0.714	no units	TEST QSAR	
Developmental toxin test	0.517	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Anthraquinone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	565	52	Sites	9	0.01	0.03	0.145	0.78	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	15103347

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	1	Sites	2	0.05	0.05	0.05	0.05	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	1	Sites	14	0.02	0.02	0.02	0.02	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,199	456	Sites	14	0.01	0.1	0.49	7.2	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	16	Sites	42	0.0128	0.0346	0.0522	0.0782	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.021	0.578	3.09	6.36	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	11	Sites	52	0.08	0.081	0.0818	0.082	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000699	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	16.6988	days	
Boiling point	OPERA QSAR	376.901	degree C	
Boiling point	TEST QSAR	357.578	degree C	
Vapor pressure	OPERA QSAR	0.000000116	mmHg	
Vapor pressure	TEST QSAR	0.000000198	mmHg	
Solubility in water	OPERA QSAR	0.00000329	mol/L	
Solubility in water	TEST QSAR	0.00000416	mol/L	
Bioconcentration factor	OPERA QSAR	6.8013	no units	
Bioconcentration factor	TEST QSAR	101.158	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3707.17	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.38871	no units	
Henry's Law constant	OPERA QSAR	0.000000305	atm-m^3/mol	

Anthraquinone
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Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
374	USEPA. 2022. 9,10-Anthraquinone: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D462810

Argon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Argon
CASRN:	7440-37-1
DTXSID:	DTXSID3052482
Use:	Atmospheric gas; used during welding; in light bulbs
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
785	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Argon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						Unlimited	9/5/2024	4935	0	1	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Argon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,203	1203	Sites	100	114	678	785	1517	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	585770477

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	1	Sites	100	1084	1084	1084	1084	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,268	2268	Sites	100	20	702	823	3763	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Argon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference

Azoxystrobin
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Azoxystrobin
CASRN:	131860-33-8
DTXSID:	DTXSID0032520
Use:	Agricultural fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000029

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1100	reduced body weight in both sexes, bile duct lesions in males	general population	OPP 2023; OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0317	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Azoxystrobin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.18	mg/kg/day	OPP 2023; OPP 2018	MRID 43678139 (Milburn 1995)	reduced body weight in both sexes, bile duct lesions in males	general population	0.0338	1100	[380]; [290]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). A new OPP assessment exists but does not contribute new data for the HRL.
Cancer Classification (CC)	NL		OPP 2023; OPP 2018						[380]; [290]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	4.5	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.67	mg/kg/day	EPA HHBP	
Health-Based Screening Level	1.2	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	800	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	18.2	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	800	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	30	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	211	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	448.6	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	20.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	448.6	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00105196	mol/kg	TEST QSAR	
Ames mutagenicity test	0.199	no units	TEST QSAR	
Developmental toxin test	0.961	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Azoxystrobin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,260	292	Sites	13	0.00012	0.004	0.0317	4.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	46	2869394	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	8	Sites	80	0.0013	0.0032	0.0375	0.39	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.0218	0.0218	0.0218	0.0218	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,044	506	Sites	25	0.00012	0.00449	0.101	128	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	3	Sites	1	0.0044	0.0084	0.467	0.662	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	9	Sites	90	0.0013	0.0013	0.0184	0.24	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	311	128	Sites	41	0.0032	0.072	0.741	5.89	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	9	Sites	24	0.005	0.0281	0.252	0.2795	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	4	Sites	0.68	4e-04	0.0013	0.00194	0.002	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	11	Sites	52	0.00475	0.0288	0.185	0.32833	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000162	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.68791	days	
Boiling point	OPERA QSAR	359.044	degree C	
Boiling point	TEST QSAR	474.033	degree C	
Vapor pressure	OPERA QSAR	8.33E-13	mmHg	
Vapor pressure	TEST QSAR	9.42E-11	mmHg	
Solubility in water	OPERA QSAR	0.0000157	mol/L	
Solubility in water	TEST QSAR	0.00000154	mol/L	
Bioconcentration factor	OPERA QSAR	12.6901	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5514.34	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.50285	no units	
Henry's Law constant	OPERA QSAR	3.38E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Azoxystrobin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
290	USEPA. 2018. Azoxystrobin: Revised Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
380	USEPA. 2023. Azoxystrobin. Human Health Risk Assessment for the Establishment of Tolerances for Residues in/on Mango and Papaya and Establishment of a Tolerance for Residues in/on Imported Palm Oil. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Benfluralin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Benfluralin
CASRN:	1861-40-1
DTXSID:	DTXSID3023899
Use:	Pre-emergent dinitroaniline herbicide used to control grasses and other weed species
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00039

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	8	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	30	increased histopathologic lesions of the kidneys seen in male and female rats	general population	OPP 2017; OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0116	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Benfluralin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.005	mg/kg/day	OPP 2017; OPP 2017	MRIDs: 44050002, 44545501	increased histopathologic lesions of the kidneys seen in male and female rats	general population	0.0338	30	[277]; [278]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2017) exists but does not contribute updated data that impacts the HRL.
Cancer Classification (CC)	S		OPP 2017; OPP 2017						[277]; [278]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.03	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	max
LD50	5000	mg/kg	NIH HSDB	min
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	475	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	437	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	10	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	604.28	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	604.28	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0156315	mol/kg	TEST QSAR	
Ames mutagenicity test	0.608	no units	TEST QSAR	
Developmental toxin test	1.142	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Benfluralin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,139	144	Sites	2	0.001	0.004	0.0116	0.205	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	3	60107	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	33	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	11,264	193	Sites	2	0.001	0.006	0.0182	0.406	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	139	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	211	2	Sites	0.95	0.05	0.113	1.26	2.71	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	2.04e-05	5.69e-05	8.61e-05	9.34e-05	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	3	Sites	14	0.00028	0.00474	0.0097	0.01	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000112	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54327	days	
Boiling point	OPERA QSAR	369.959	degree C	
Boiling point	TEST QSAR	361.409	degree C	
Vapor pressure	OPERA QSAR	0.000065	mmHg	
Vapor pressure	TEST QSAR	0.00000446	mmHg	
Solubility in water	OPERA QSAR	0.000000479	mol/L	
Solubility in water	TEST QSAR	0.00000164	mol/L	
Bioconcentration factor	OPERA QSAR	941.609	no units	
Bioconcentration factor	TEST QSAR	234.963	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	10697.1	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.28994	no units	
Henry's Law constant	OPERA QSAR	0.0000425	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Benfluralin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
277	USEPA. 2017. Benfluralin Revised Benfluralin Chronic Dietary Exposure and Risk Assessment in Support of the Draft Preliminary Human Health Risk Assessment. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.;
278	USEPA. 2017. Benfluralin: Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Bensulide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bensulide
CASRN:	741-58-2
DTXSID:	DTXSID9032329
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	120

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	6	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	8	Inhibition of red blood cell cholinesterase in male pups (PND 11 initially)	all infants	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
979		EDWC SW	OPP	2016

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bensulide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.006	mg/kg/day	OPP 2016	Barnett 2014	Inhibition of red blood cell cholinesterase in male pups (PND 11 initially)	all infants	0.143	8	[265]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www./sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL." Also, a steady-state (ss) population-adjusted dose (PAD) was used for the reference dose because no chronic reference dose was derived and repeated exposure does not increase inhibition of cholinesterase.
Cancer Classification (CC)	E		OPP 2016						[265]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.15	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1540	mg/kg	NIH HSDB	max
LD50	270	mg/kg	NIH HSDB	min
LOAEL	2.3	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	218.5	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	218.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	37	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000444631	mol/kg	TEST QSAR	
Ames mutagenicity test	0.636	no units	TEST QSAR	
Developmental toxin test	0.742	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bensulide

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	6	498285	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Ambient Water		Prevalence				Magnitude					
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	109	33	Sites	30	0.02	0.59	6.39	582	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water, Peak	2016	OPP	979	ug/L	Tier II Surface Water Concentration Calculator (SWCC), v1.106	The critical effect of cholinesterase inhibition in postnatal day 11 pups is considered a less-than-chronic response in a sensitive population. To be protective of this population, the modeled surface water peak concentration was selected as the occurrence concentration for bensulide.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000211	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	201.543	days	
Boiling point	OPERA QSAR	384.666	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000802	mmHg	
Vapor pressure	TEST QSAR	0.00000121	mmHg	
Solubility in water	OPERA QSAR	25082.25	µg/L	
Solubility in water	TEST QSAR	15303.75	µg/L	
Bioconcentration factor	OPERA QSAR	4.84233	no units	
Bioconcentration factor	TEST QSAR	13.4276	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1000.26	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.20853	no units	
Henry's Law constant	OPERA QSAR	0.00000157	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bensulide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
265	USEPA. 2016. Bensulide: Human Health Risk Assessment to Support Registration Review. EPA-HQ-OPP-2008-0022-0019. DP No. D428598. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Bentazone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bentazone
CASRN:	25057-89-0
DTXSID:	DTXSID0023901
Use:	Former herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00015

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	890	Based on decreased absolute pup body weights during lactation.	general population	OPP 2014

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.13	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bentazone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OPP 2014	Suter et al. 1989	Based on decreased absolute pup body weights during lactation.	general population	0.0338	890	[252]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	E		OPP 2014						[252]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.3	mg/l	EPA DWSHA 2018	
Acute/Short-term Health-Based Guidance Value	0.06	mg/l	MN DOH	Short-term: Developmental
Acute/Short-term Health-Based Guidance Value	0.4	mg/l	MN DOH	Acute: Developmental; Female reproductive system
Public Health Goal	0.2	mg/l	CalEPA OEHHA Public Health Goals	
Chronic Health-Based Guidance Value	0.03	mg/l	MN DOH	
Lifetime Health Advisory	0.2	mg/l	EPA DWSHA 2018	
Subchronic Health-Based Guidance Value	0.05	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1139	mg/kg	NIH HSDB	max
LD50	383.2	mg/kg	NIH HSDB	min
LOAEL	13.1	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	249	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	244	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.2	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	243.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	258.3	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	258.3	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	77.8	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	1.022	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bentazone

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,564	513	Sites	6.78	0.00049	0.0115	0.13	63.1	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	40	2334089	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	2	Sites	4	0.01	0.01	0.021	0.03	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	211	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.02	0.02	0.02	0.02	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	8	Sites	47	3e-04	0.0013	0.00757	0.105	µg/L	
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,231	3	Sites	0.13	4.6	5.3	8.42	9.2	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,225	427	Sites	7	0.00051	0.0102	0.11	120	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	72	Sites	33	3e-04	0.00111	0.0186	1.31	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	3e-04	0.0014	0.0097	0.194	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	5	Sites	13	0.0116	0.0187	0.0624	0.088	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	13	Sites	2	0.0019	0.0216	0.124	0.398	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	4	Samples	3				0.03	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000221	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.89764	days	
Boiling point	OPERA QSAR	303.704	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000343	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	518860.632	µg/L	
Solubility in water	TEST QSAR	12999.148	µg/L	
Bioconcentration factor	OPERA QSAR	1.41807	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	33.9068	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.33723	no units	
Henry's Law constant	OPERA QSAR	2.59E-10	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bentazone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
252	USEPA. 2014. Sodium Bentazon - Preliminary Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2010-0117. DP No. D417312. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Benzophenone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Benzophenone
CASRN:	119-61-9
DTXSID:	DTXSID0021961
Use:	Chemical intemediate used pesticide, fragrance, varnish, antihistamines
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00059

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	non-neoplastic kidney effects in male rats	general population	EFSA 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.118	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Benzophenone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	EFSA 2009	NTP 2006	non-neoplastic kidney effects in male rats	general population	0.0338	200	[60]	Note: RfD is based off a BMDL10 value of 3.1 mg/kg/day divided by an UF of 100. Chronic carcinogenicity rat study.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic	6.4	Hoshino, 2005	Female Reproductive, Nervous System, Gastrointestinal, Musculoskeletal, Endocrine	4199	Chhabra, 2000	Not date limited	1/28/2020	1221	7	15	5

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.9	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice SE	no units	HHS NTP	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice SE	no units	HHS NTP	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP	SE = Some evidence of carcinogenicity

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	max
LD50	1900	mg/kg	NIH HSDB	min
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	300	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	300	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	4199	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	75	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	4199	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	75	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0262422	mol/kg	TEST QSAR	
Ames mutagenicity test	0.378	no units	TEST QSAR	
Developmental toxin test	0.553	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Benzophenone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	553	74	Sites	13.38	0.01	0.04	0.118	0.4	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	34	3	Sites	9	0.01	0.07	0.1	0.1	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	4	Sites	57	0.01	0.03	0.06	0.08	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,173	836	Sites	26	0.01	0.05	0.13	6.83	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	12	Sites	32	0.0714	0.184	0.214	0.221	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	1	Samples	1				0.04	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	20	16	Sites	80	0.05	0.1	0.24	0.74	µg/L	
Waste Water Effluent			Prevalence					Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	20	Sites	95	0.051	0.17	0.34	0.36	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000309	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.25122	days	
Boiling point	OPERA QSAR	305.417	degree C	
Boiling point	TEST QSAR	303.142	degree C	
Vapor pressure	OPERA QSAR	0.00191301	mmHg	
Vapor pressure	TEST QSAR	0.000349945	mmHg	
Solubility in water	OPERA QSAR	136982.6552	µg/L	
Solubility in water	TEST QSAR	49613.58394	µg/L	
Bioconcentration factor	OPERA QSAR	12.1482	no units	
Bioconcentration factor	TEST QSAR	87.9023	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	426.789	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.18141	no units	
Henry's Law constant	OPERA QSAR	0.000000713	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Benzophenone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
52	Danish Environmental Protection Agency. 2018. Substance Evaluation Conclusion as required by REACH Article 48 and Evaluation Report for Benzophenone EC No 204-337-6 CAS No 119-61-9. Copenhagen, Denmark. EC No 204-337-6
60	EFSA. 2009. Scientific Opinion: Toxicological Evaluation of Benzophenone. Scientific Opinion of the Panel on food contact materials, enzymes, flavourings and processing aids (CEF). The EFSA Journal (2009) 1104, 1-30.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Benzyl butyl phthalate
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Benzyl butyl phthalate
CASRN:	85-68-7
DTXSID:	DTXSID3020205
Use:	Chemical intermediate; plasticizer
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.081

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	carcinogen with linear MOA	9	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	16	increased incidence of pancreatic cancer in male F334 rats	general population	PPRTV 2002

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.3	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Benzyl butyl phthalate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	IRIS 1989	NTP 1985	Significantly increased liver- to-body weight and liver-to-brain weight ratios	general population	0.0338	1000	[163]	
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	OW 1991	NTP 1985	increased liver weight in rats	general population	0.0338	1000	[177]	
Cancer Slope Factor (CSF)	0.0019	$(mg/kg/day)^{-1}$	PPRTV 2002	NTP 1997a	increased incidence of pancreatic cancer in male F334 rats	general population	0.0338	16	[201]	
Cancer Classification (CC)	C		IRIS 1989						[163]	C = Possible human carcinogen
Cancer Classification (CC)	C		PPRTV 2002						[201]	C = Possible human carcinogen
Cancer Classification (CC)	C		OW 1991						[177]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Neurological, Systemic	2	Betz, 2013	Hematologic	1500	Uriu-Adams, 2001	10/1/2001	12/17/2019	656	12	34	11

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.0001	mg/l	EPA Human Health Criteria for CWA	
Maximum Allowable Daily Level	1200	µg/day	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP (1981)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Mice NT	no units	HHS NTP (1995)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Rats EE	no units	HHS NTP (1995)	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP (1981)	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP (1981)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NT	no units	HHS NTP (1995)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Rats IS	no units	HHS NTP (1981)	IS = Inadequate study of carcinogenic activity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP (1995)	SE = Some evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	13750	mg/kg	NIH HSDB	max
LD50	2000	mg/kg	NIH HSDB	min
LOAEL	1800	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1800	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	240	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	13	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1250	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	1250	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	550	mg/kg/day	EPA Toxicity Reference Database	min
TD50	347	mg/kg/day	NIH CPDB	min
TD50	47000	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0591562	mol/kg	TEST QSAR	
Ames mutagenicity test	0.035	no units	TEST QSAR	
Developmental toxin test	0.749	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 3 - >= 0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Benzyl butyl phthalate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	2	Sites	9	1.3	1.3	1.3	1.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	21	1	Sites	5	0.005	0.029	0.0674	0.077	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	484	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	221	2	Sites	0.9	0.003	0.042	5.41	8.5	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	638	1	Sites	0.16	4.7	5.2	5.6	5.7	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,858	96	Sites	5	0.1	0.9	5.18	180	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	11	Sites	52	0.43	1.34	8.46	16.7	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000162	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35445	days	
Boiling point	OPERA QSAR	369.943	degree C	
Boiling point	TEST QSAR	392.394	degree C	
Vapor pressure	OPERA QSAR	0.00000818	mmHg	
Vapor pressure	TEST QSAR	0.00000433	mmHg	
Solubility in water	OPERA QSAR	1736.7494	µg/L	
Solubility in water	TEST QSAR	5778.7525	µg/L	
Bioconcentration factor	OPERA QSAR	16.2523	no units	
Bioconcentration factor	TEST QSAR	16.6725	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5236.5	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.81594	no units	
Henry's Law constant	OPERA QSAR	2.91E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Benzyl butyl phthalate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
163	USEPA. 1989. Chemical Assessment Summary Butyl benzyl phthalate. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
177	USEPA. 1991. Drinking Water Criteria Document for Phthalic Acid Esthers (PAES). U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.
201	USEPA. 2002. Provisional Peer Reviewed Toxicity Values for Butyl benzyl phthalate (CASRN 85-68-7) Derivation of a Carcinogenicity Assessment. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Bicarbonate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bicarbonate
CASRN:	71-52-3
DTXSID:	DTXSID2049921
Use:	A carbon oxoanion resulting from the removal of a proton from carbonic acid that readily forms a chemical bond with another element. -Sodium Bicarbonate: used as baking powder, soaps, detergents, mouth wash, and food additives
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
313000	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bicarbonate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent			EFSA 2014						[66]	The CEF Panel concluded that the use of the substances sodium erythorbate, sodium carbonate, sodium bicarbonate, iron sulphate, activated carbon, cellulose, calcium hydroxide, calcium chloride and water does not raise a safety concern when used in oxygen absorber/carbon dioxide emitter systems, in sachets that prevent the physical release of their contents into the food.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						5/1/2013	9/30/2024	5,619	0	24	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.101	no units	TEST QSAR	
Developmental toxin test	0.899	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bicarbonate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,563	9547	Sites	99.83	200	145000	313000	2800000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	37	37	Sites	100	20000	104000	314200	380000	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	21	Sites	100	10000	50500	469000	915000	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			163000	163000		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	26,741	26692	Sites	100	100	166000	366000	82400000	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	9,651	9643	Samples	100	1100	354000	912800	45700000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	100,871	98708	Samples	98	10	418000	1915000	241592000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000957	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.57763	days	
Boiling point	OPERA QSAR	299.151	degree C	
Boiling point	TEST QSAR	84.31	degree C	
Vapor pressure	OPERA QSAR	0.0105684	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	1039686.968	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR	4.92728	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3.85959	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.094855	no units	
Henry's Law constant	OPERA QSAR	3.78E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bicarbonate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
66	European Food Safety Authority (EFSA). 2014. Scientific Opinion on the safety assessment of the active substances, sodium erythorbate, sodium carbonate, sodium bicarbonate, iron sulphate, activated carbon, cellulose, calcium hydroxide, calcium chloride and water, for use as active system in food contact materials evaluated by EFSA in EFSA Journal 2014;12(2):3571; EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids, European Food Safety Authority (EFSA), Parma, Italy.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Bifenthrin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bifenthrin
CASRN:	82657-04-3
DTXSID:	DTXSID9020160
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00012

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	6	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	210	reduced locomotor activity	children	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0256	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bifenthrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.031	mg/kg/day	OPP 2020	Wolansky et al. 2006	reduced locomotor activity	children	0.15	210	[128]	Note: "A chronic dietary endpoint is not required for bifenthrin because repeated exposure does not result in a point of departure lower than which results from acute exposure."; The HRL is based on the EPA's acute Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	C		OPP 2020						[128]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.21	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.031	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.07	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4450	mg/kg	NIH HSDB	max
LD50	54.5	mg/kg	NIH HSDB	min
LOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	97.2	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	97.2	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	16	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000136144	mol/kg	TEST QSAR	
Ames mutagenicity test	0.392	no units	TEST QSAR	
Developmental toxin test	0.781	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bifenthrin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,401	19	Sites	0.79	8e-05	0.00239	0.0256	0.134	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	1811781	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	9	17,565

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	12	0.0053	0.0207	0.0329	0.036	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,792	36	Sites	2.01	5e-05	0.0092	0.0296	0.0675	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	190	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8.33	0.008	0.008	0.008	0.008	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,390	491	Sites	35.32	0.000203	0.0116	0.117	5.633527	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	2.63	0.0218	0.0218	0.0218	0.0218	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	1	Sites	0.17	1e-04	1e-04	1e-04	1e-04	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	6	Sites	28.57	0.00352	0.0109	0.036	0.0772	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000161	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54377	days	
Boiling point	OPERA QSAR	370.919	degree C	
Boiling point	TEST QSAR	411.331	degree C	
Vapor pressure	OPERA QSAR	0.000000179	mmHg	
Vapor pressure	TEST QSAR	0.000000121	mmHg	
Solubility in water	OPERA QSAR	21.397222	µg/L	
Solubility in water	TEST QSAR	21.058926	µg/L	
Bioconcentration factor	OPERA QSAR	4990.65	no units	
Bioconcentration factor	TEST QSAR	381.944	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	223091	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.18611	no units	
Henry's Law constant	OPERA QSAR	4.85E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bifenthrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
128	OPP. 2020. Bifenthrin. Acute and Chronic Dietary Exposure and Risk Assessments of Food and Drinking Water for Bifenthrin to Support Registration Review, PP#8F8704 Proposed Section 3 Registration on Sunflower Subgroup 20B, as well as PP#6E8482 Proposed Section 3 Registration on Some Fruit Group 11-10 (except Mayhaw), Peach Subgroup 12-12B, Avocado, Pomegranate, Brassica Leafy Greens Subgroup 4-16B Treated at a 1-day PHI, and the Crop Group Expansions of Tomato to Tomato Subgroup 8-l0A, Pepper to Pepper/Eggplant Subgroup 8-10B, Grape to Small Vine Climbing Fruit Except Fuzzy Kiwifruit Subgroup 13-07F, and Strawberry to Low Growing Berry Subgroup 13-07G. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Bisphenol A

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bisphenol A
CASRN:	80-05-7
DTXSID:	DTXSID7020182
Use:	Production of polycarbonate and epoxy resins. Formerly used as fungicide.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	3500

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
10	reproductive and developmental effects	8	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0003	increased percentage of Th17 cells in the immune system of female PND 21 mice	all infants	EFSA 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.0428	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bisphenol A

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	IRIS 1988	NTP 1982	reduced mean bodyweight	general population	0.0338	300	[158]	
Reference Dose (RfD) or Equivalent	0.0000002	mg/kg/day	EFSA 2023	Luo et al. 2016	increased percentage of Th17 cells in the immune system of female PND 21 mice	all infants	0.143	0.0003	[64]	Note: "The CEP Panel therefore applied an overall UF of 50, comprising the normal default factors of 2.5 for inter-species toxicodynamic difference and 10 for intra-human variability in toxicokinetics and toxicodynamics, together with the additional UF of 2 based on the uncertainty analysis"

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/1987	12/17/2019	9149	230	20	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2230	mg/kg	NIH HSDB	min
LD50	5280	mg/kg	NIH HSDB	max
LOAEL	160	mg/kg/day	EPA Toxicity Reference Database	
NOAEL	160	mg/kg/day	EPA Toxicity Reference Database	
Percent of active toxcast in vitro assays tested	23	percent	EPA Chemistry Dashboard	
TD50	1320000	mg/kg/day	NIH CPDB	max
TD50	445	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0179887	mol/kg	TEST QSAR	
Ames mutagenicity test	0.086	no units	TEST QSAR	
Developmental toxin test	0.711	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 3 - >= 0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Bisphenol A
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,462	36	Sites	2.5	0.02	0.06	1.04	7.66	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	25	3,051,090

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	0	Sites	0						
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	9.16	9.16	9.16	9.16	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0		ND		0	µg/L	
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	4	Samples	50	0	2.7e-06		4.43e-05 ± 1.01e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,044	269	Sites	13	0.01	0.11	0.59	4.97	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	4		0.029		0.029	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	15	Sites	39	0.0253	0.0649	0.134	0.163	µg/L	
Bexfield et al. 2019 (Groundwater) [42]	2013 - 2015	1,077	7	Sites	0.65	0.171062	0.193	0.34	0.430036	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	6	Samples	75	0	1.27e-05		2.19e-05 ± 1.6e-06	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	266	10	Samples	4				0.056	µg/L	
Maruya et al. 2016 (Ambient) [104]	2013	9	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95	0.051	0.263	1.15	2.77	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	20	2	Sites	10	0.152752	0.242	0.401	0.441148	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000055	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	4.2	ug/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	15.145	days	
Boiling point	OPERA QSAR	343.191	degree C	
Boiling point	TEST QSAR	359.933	degree C	
Vapor pressure	OPERA QSAR	6.78E-08	mmHg	
Vapor pressure	TEST QSAR	0.00000259	mmHg	
Solubility in water	OPERA QSAR	170111.7235	µg/L	
Solubility in water	TEST QSAR	284110.4324	µg/L	
Bioconcentration factor	OPERA QSAR	43.6523	no units	
Bioconcentration factor	TEST QSAR	117.22	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1436.23	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.32044	no units	
Henry's Law constant	OPERA QSAR	0.000000125	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bisphenol A

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
42	Bexfield, L.M., P.L. Toccalino, K. Belitz, W.T. Foreman, and E.T. Furlong. 2019. Hormones and pharmaceuticals in groundwater used as a source of drinking water across the United States. Environmental Science and Technology 53: 2950-2960.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
64	European Food Safety Authority (EFSA) Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids, 2023. Re-evaluation of the risks to public health related to the presence of bisphenol A (BPA) in foodstuffs. EFSA Journal 2023;21(4):6857. doi: 10.2903/j.efsa.2023.6857.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
158	USEPA. 1988. Chemical Assessment Summary Bisphenol A. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
421	Willhite, C., Ball. G., and McLellan, C. 2008. Journal of Toxicology and Environmental Health, Part B. 11:69-146.

Boron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Boron
CASRN:	7440-42-8
DTXSID:	DTXSID3023922
Use:	Former pesticide; oxygen scavenger; catalyst; in composite structural materials
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.48

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1000	decreased fetal body weights	females of reproductive age	OW 2008

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
475	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on boron in RD 2 (2008). The EPA concluded that boron was not likely to occur at levels of concern when considering both surface and groundwater systems, and thus an NPDWR did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- Detections greater than ½ RD 2 HRL in NIRS groundwater monitoring
- No detections greater than the ½ RD 2 HRL in AwwaRF surface water monitoring study
- The EPA believed the overall national occurrence and exposure from both surface and ground water systems together were likely to be lower than values observed from NIRS
- RD 2 HRL = 1,400 ug/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Boron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	OW 2008	Allen et al. 1996; Heindel et al. 1992; Price et al. 1994 and 1996	decreased fetal body weights	females of reproductive age	0.0354	1000	[224]	Note: While there are more recent assessments (ATSDR, 2010; HC, 2023; WHO 2009), none of these assessments used new science to derive the RfV. The most recent assessment (HC, 2023) used Weir and Fisher (1972) as the basis of its RfV. The EPA-OW assessment considered using Weir and Fisher (1972) as the critical study but ultimately decided to not use it as the critical study for a number of reasons. This OW assessment also used benchmark dose modeling to derive the RfD therefore the HC, 2023 assessment does not provide a more refined RfD.
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	ATSDR 2010	Allen et al. 1996; Heindel et al. 1992; Price et al. 1994 and 1996	decreased fetal body weights	females of reproductive age	0.0354	1000	[18]	
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	WHO 2009	Allen et al. 1996; Heindel et al. 1992; Price et al. 1994 and 1996	decreased fetal body weights	females of reproductive age	0.0354	1000	[414]	
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	IRIS 2004	Allen et al. 1996; Heindel et al. 1992; Price et al. 1994 and 1996	decreased fetal weight	females of reproductive age	0.0354	1000	[206]	
Reference Dose (RfD) or Equivalent	0.16	mg/kg/day	EFSA 2004	Price et al., 1996a	decreased foetal body weight in rats following maternal exposure during pregnancy	females of reproductive age	0.0354	900	[58]	NOTE: The reference dose equivalent is a tolerable daily intake level. NDA Panel derived following UL values: 10 mg boron/person/day for adults and 3, 4, 5, 7 and 9 mg boron/day for children aged 1-3, 4-6, 7-10 11-14 and 15-17 years of age, respectively, derived by extrapolating from the UL for adults on a body surface area basis. These UL values apply to the intake of boron in the form of boric acid and borates.
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	HC 2023	Weir and Fisher 1972	decreased testicular weight	general population	0.0338	60	[86]	Note: Reported as tolerable daily intake, which is the BMDL (2.90 mg/kg/day) divided by a 300 total uncertainty factor.
Cancer Classification (CC)	I		IRIS 2004						[206]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive	1	Marat, 2018	Developmental, Systemic	125	El-Dakdoky, 2013	11/1/2009	2/13/2020	2877	9	30	4

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	3	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.2	mg/kg/day	CDC ATSDR	
Acute inhalation Minimal Risk Level (MRL)	0.3	mg/m^3	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	0.5	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.5	mg/l	MN DOH	
Drinking Water Guideline Value	2.4	mg/l	WHO Drinking Water Quality Guidelines	
Intermediate Minimal Risk Level (MRL)	0.2	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	6	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	5	mg/l	Canadian Drinking Water Guidelines	
Subchronic Health-Based Guidance Value	0.5	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Boron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	810	Sites	82	5	47	475	3950	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	6,139	5803	Sites	95	1	37	201	4810	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000 - 500,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	3	2	Sites	67	11	27	39.8	43	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	273	192	Sites	70	0.076	180	500	9000	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	31	31	Sites	100	4	110	234	1830	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	5		Sites			140	200		µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,929	1184	Sites	61	0.0151	240	1000	235000	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	28,005	25999	Sites	93	0.2	64	480	1e+08	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	738	Sites	97	3	34	446	4080	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	1.063459187	21.4	50.3	217.295097	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	4,910	4618	Samples	94	10	6000	68150	653000	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
EPA Ash Database (Wastewater)	1973 - 2014	50	45	Sites	90	64	557	3030	14100	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	8	Sites	100	125	148400	250470	666000	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	428	414	Samples	97	0.188168	159	39360	584000	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	39	Sites	100	0.736	3460	34000	280000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Boron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
18	ATSDR. 2010. Toxicological Profile for Boron. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
58	EFSA (European Food Safety Authority), 2004. Opinion of the Scientific Panel on Dietetic Products, Nutrition, and Allergies (NDA) on the tolerable upper intake level for boron (sodium borate and boric acid). Request N° EFSA-Q-2003-018). Adopted 8 July 2004.
86	HC. 2023. Guideline Technical Document - Boron. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
206	USEPA. 2004. Chemical Assessment Summary, Boron. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
224	USEPA. 2008. Health Effects Support Document for Boron. U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, D.C.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
414	WHO. 2009. Boron in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization (WHO), Geneva, Switzerland.

Boscalid

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Boscalid
CASRN:	188425-85-6
DTXSID:	DTXSID6034392
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.34

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1300	Based on the combined results of the chronic toxicity and chronic toxicity/carcinogenicity studies in rats and the chronic toxicity study in dogs which showed thyroid and liver toxicity in both species.	general population	OPP 2021; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
436		EDWC, GW (chronic)	OPP	2021

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Boscalid

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.22	mg/kg/day	OPP 2021; OPP 2019	MRID 45404826; MRID 45404827; MRID 45404828	Based on the combined results of the chronic toxicity and chronic toxicity/carcinogenicity studies in rats and the chronic toxicity study in dogs which showed thyroid and liver toxicity in both species.	general population	0.0338	1300	[132]; [304]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	S		OPP 2021; OPP 2019						[132]; [304]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	1.4	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	1804	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	57.4	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	12.3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1804	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	2209	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	78.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2209	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	7.6	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00933254	mol/kg	TEST QSAR	
Ames mutagenicity test	0.516	no units	TEST QSAR	
Developmental toxin test	0.762	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Boscalid

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	2	Sites	15	0.0091	0.019	0.0268	0.0288	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	37	822064	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	5	0	Sites	0						
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.0029	0.0034	0.00556	0.0061	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	336	125	Sites	37	0.0011	0.0151	0.102	11.2	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	216	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	5	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	63	17	Sites	27	0.0251	0.381	1.17	7.86	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	11	Sites	29	0.0052	0.009	0.215	0.6781	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	4	Sites	19	0.00461	0.0223	0.0762	0.12956	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater (chronic)	2021	OPP	436	ug/L	Pesticide in Water Calculator (PWC), v1.52	The modeled groundwater chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for boscalid. This value coincides with the critical effects of thyroid and liver toxicity provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000189	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.99313	days	
Boiling point	OPERA QSAR	396.779	degree C	
Boiling point	TEST QSAR	446.25	degree C	
Vapor pressure	OPERA QSAR	1.17E-09	mmHg	
Vapor pressure	TEST QSAR	1.04E-08	mmHg	
Solubility in water	OPERA QSAR	3638.026	µg/L	
Solubility in water	TEST QSAR	1897.9513	µg/L	
Bioconcentration factor	OPERA QSAR	776.497	no units	
Bioconcentration factor	TEST QSAR	107.152	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1557.27	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.96055	no units	
Henry's Law constant	OPERA QSAR	2.67E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Boscalid

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
132	OPP. 2021. Boscalid. Human Health Risk Assessment for the Establishment of a Permanent Tolerance Without a U.S. Registration on Tea. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D456100.
304	USEPA. 2019. Boscalid. Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2014-0199-0020. DP No. D451675. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Bromacil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bromacil
CASRN:	314-40-9
DTXSID:	DTXSID4022020
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00079

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	116	Based on decreases in mean absolute body weight and decreased food efficiency.	general population	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0914	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bromacil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0196	mg/kg/day	OPP 2016	Bogdanffy 1989	Based on decreases in mean absolute body weight and decreased food efficiency.	general population	0.0338	116	[266]	
Cancer Classification (CC)	C		OPP 2016						[266]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	5	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.07	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5200	mg/kg	NIH HSDB	max
LD50	641	mg/kg	NIH HSDB	min
LOAEL	714	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	9.82	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1.96	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	714	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00476431	mol/kg	TEST QSAR	
Ames mutagenicity test	0.514	no units	TEST QSAR	
Developmental toxin test	0.87	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bromacil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,733	474	Sites	6.1	0.00043	0.0104	0.0914	21.7	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	3	64131	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	1,250

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	174	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	11	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	4	Sites	27	0.0086	0.045	0.0654	0.069	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0		ND			µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,117	1	Sites	0.05	1.5	1.5	1.5	1.5	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	9,926	616	Sites	6	0.00055	0.08	0.775	51	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	46	Sites	21	0.002	0.0445	1.8	21.8	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	7	Sites	70	0.002	0.014	0.0573	0.41	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	397	33	Sites	8	0.0205	0.118	3.2	270	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	5	Sites	13	0.02	0.028	0.0948	0.1	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	32	Sites	5	4e-04	0.0164	1.07	7.76	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	2	Samples	3				0.114	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	4	Sites	19	0.093	0.196	0.774	1.41	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000048	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.88671	days	
Boiling point	OPERA QSAR	290.808	degree C	
Boiling point	TEST QSAR	315.49	degree C	
Vapor pressure	OPERA QSAR	0.000000309	mmHg	
Vapor pressure	TEST QSAR	0.000000402	mmHg	
Solubility in water	OPERA QSAR	805220.4939	µg/L	
Solubility in water	TEST QSAR	468638.1029	µg/L	
Bioconcentration factor	OPERA QSAR	3.23282	no units	
Bioconcentration factor	TEST QSAR	3.5156	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	39.8863	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.10931	no units	
Henry's Law constant	OPERA QSAR	0.00000134	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bromacil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
266	USEPA. 2016. Bromacil and its Lithium Salt - Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Bromide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bromide
CASRN:	24959-67-9
DTXSID:	DTXSID6043967
Use:	Present in with a concentration of around 65 mg/L (0.2% of all dissolved salts). Bromide ions can be found in almost all living organisms.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.16

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	marginal alterations in electroencephalogram results in females	general population	WHO 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
320	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bromide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.4	mg/kg/day	WHO 2009	Sangster et al. 1986	marginal alterations in electroencephalogram results in females	general population	0.0338	2000	[415]	Note: RfD is an acceptable daily intake (ADI). This ADI is based on a conservative NOEL (no observed effect level) of 4 mg/kg/day divided only by 10 (safety factor for population diversity). Carcinogenicity was not evaluated; however, the assessment did note that sodium and ammonium bromide were negative for mutagenicity in one study using Ames test.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						1/1/2008	8/9/2024	16,091			

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bromide

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	8,851	8145	Sites	92	4	57	320	75000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	250,000,000 - 500,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	5	Sites	100	20	40	46.5	50	µg/L	
Disinfection Byproducts ICR 1997-1998. (Finished)	1997 - 1998	294	274	Sites	93	20	60	210	170	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	31	23	Sites	74	10	36.5	397	523	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	24		Sites	50		40		240	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	3		Sites			59.5	110		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	24,270	21084	Sites	87	0.09	95	699	16100000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	24		Sites	79		60		260	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	721	Sites	95	4	43	368	3040	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	7	Sites	91	10	35.9	142	180.773387	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	3,151	3138	Samples	100	10	3585	636974	10600000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	6,988	6548	Samples	94	19	151914	1650000	10600000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	10	5	Sites	50	50	205	524	740	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	9	51	422		µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	3	3	Sites	100	9500	96000	240000	890000	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	199	93	Samples	47	7.2	261000	906600	3300000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bromide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
415	WHO. 2009. Bromide in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Bromochloromethane

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bromochloromethane
CASRN:	74-97-5
DTXSID:	DTXSID4021503
Use:	Fire extinguishing fluid; chemical intermediate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0051

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	77	increased liver to body weight ratio	general population	OW 1989

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.395	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bromochloromethane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.013	mg/kg/day	OW 1989	Torkelson et al. 1960	increased liver to body weight ratio	general population	0.0338	77	[161]	Note: this value was extrapolated from inhalation toxicity data.
Cancer Classification (CC)	D		OW 1989						[161]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	D		IRIS 1991						[176]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	I		PPRTV 2009						[232]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2008	4/14/2020	6	0	0	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	1	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.09	mg/l	EPA DWSHA 2018	
Provisional Subchronic RfC	0.1	mg/m^3	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4300	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00238781	mol/kg	TEST QSAR	
Ames mutagenicity test	0.69	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Bromochloromethane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	309	Sites	6	0.06	0.11	0.395	5.17	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	22,974	106	Sites	0.46	0.0023	1	6	33.4	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	12,881	65	Sites	0.5	0.05	1	10	210	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,211	18	Sites	0.25	0.01	0.14	0.444	1.15	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	401	11	Sites	3	0.5	0.805	3.65	6	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	888	29	Sites	3	0.5	2.4	6.26	18	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	1	Sites	0.08	0.66	0.66	0.66	0.66	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.07637	0.0764	0.0764	0.07637	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,242	23	Sites	0.54	0.4	1.15	3	8.9	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	130	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,665	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	33	1	Sites	3	0.61	0.61	0.61	0.61	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	9,220	40	Sites	0.43	0.01	0.045	0.167	2.03	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	5	Sites	13	0.02169	0.0357	0.0554	0.05931	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	1	Sites	0.15	0.03	0.03	0.03	0.03	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000683	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	14.3515	days	
Boiling point	OPERA QSAR	67.9484	degree C	
Boiling point	TEST QSAR	66.832	degree C	
Vapor pressure	OPERA QSAR	143.159	mmHg	
Vapor pressure	TEST QSAR	231.206	mmHg	
Solubility in water	OPERA QSAR	16487410.92	µg/L	
Solubility in water	TEST QSAR	8088488.274	µg/L	
Bioconcentration factor	OPERA QSAR	4.00523	no units	
Bioconcentration factor	TEST QSAR	4.40555	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	80.6447	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.41109	no units	
Henry's Law constant	OPERA QSAR	0.00377157	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bromochloromethane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
161	USEPA. 1989. Bromochloromethane Health Advisory. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
176	USEPA. 1991. Chemical Assessment Summary, Bromochloromethane. U.S. Environmental Protection Agency, National Center for Environmental Protection, Integrated Risk Information System (IRIS), Washington, D.C.
232	USEPA. 2009. Provisional Peer-Reviewed Toxicity Values for Bromochloromethane. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Bromoxynil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Bromoxynil
CASRN:	1689-84-5
DTXSID:	DTXSID3022162
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.85

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	carcinogen with linear MOA	6	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.287	hepatocellular tumors	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.244	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Bromoxynil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.015	mg/kg/day	OPP 2018	MRIDs 40780301, 41304701 (Harling et al. 1988 and 1989)	increased incidence of panting, decreased absolute body weight	general population	0.0338	89	[291]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Slope Factor (CSF)	0.103	$(mg/kg/day)^{-1}$	OPP 2018	MRIDs 43245501, 40780301 (Budd and Rinde 1997)	hepatocellular tumors	general population	0.0338	0.287	[291]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	C		OPP 2018						[291]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.000311	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.096	mg/l	Health-based screening levels from USGS	
Maximum Allowable Concentration (MAC)	0.03	mg/l	Canadian Drinking Water Guidelines	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	365	mg/kg	NIH HSDB	max
LD50	63	mg/kg	NIH HSDB	min
LOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	46	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	46	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	27	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00115345	mol/kg	TEST QSAR	
Ames mutagenicity test	0.367	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Bromoxynil
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,564	63	Sites	0.83	6e-04	0.0253	0.244	6.1	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	28	3890923	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	265

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,987	33	Sites	0.55	0.0019	0.01	0.221	2.08	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	1	Sites	17	0.065	0.065	0.065	0.065	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	11	0.0128	0.0194	0.0902	0.1185	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000287	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.88254	days	
Boiling point	OPERA QSAR	306.687	degree C	
Boiling point	TEST QSAR	295.87	degree C	
Vapor pressure	OPERA QSAR	4.82E-08	mmHg	
Vapor pressure	TEST QSAR	0.000264241	mmHg	
Solubility in water	OPERA QSAR	0.000430874	mol/L	
Solubility in water	TEST QSAR	0.000237684	mol/L	
Bioconcentration factor	OPERA QSAR	5.76214	no units	
Bioconcentration factor	TEST QSAR	12.331	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	469.167	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.62501	no units	
Henry's Law constant	OPERA QSAR	0.000000232	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Bromoxynil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
291	USEPA. 2018. Bromoxynil and Bromoxynil Esters: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Caffeine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Caffeine
CASRN:	58-08-2
DTXSID:	DTXSID0020232
Use:	Central nervous system stimulant
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.083

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	reproductive and developmental effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	3.03	lowest therapeutic dose: pain reliever aid	all infants	NIH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.2507	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Caffeine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.000542	mg/kg/day	NIH 2023	Aurohealth 2023	lowest therapeutic dose: pain reliever aid	general population	0.0338	12.8	[121]	NOTE: The CCL Screening Level is based on the EPA's Human Health Benchmarks for Pharmaceuticals (HHB-Rx) in Drinking Water (see https://www.epa.gov/sdwa/human-health-benchmarks for more information). HHB-Rxs use a lowest therapeutic dose/3000x UF in place of an RfD; lowest therapeutic doses were obtained from FDA-approved labels.
Reference Dose (RfD) or Equivalent	0.000542	mg/kg/day	NIH 2023	Aurohealth 2023	lowest therapeutic dose: pain reliever aid	all infants	0.143	3.03	[121]	NOTE: The CCL Screening Level is based on the EPA's Human Health Benchmarks for Pharmaceuticals (HHB-Rx) in Drinking Water (see https://www.epa.gov/sdwa/human-health-benchmarks for more information). HHB-Rxs use a lowest therapeutic dose/3000x UF in place of an RfD; lowest therapeutic doses were obtained from FDA-approved labels.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Maximum Recommended Daily Dose	10	mg/kg/day	FDA	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	127	mg/kg	NIH HSDB	min
LD50	230	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00114288	mol/kg	TEST QSAR	
Ames mutagenicity test	0.192	no units	TEST QSAR	
Developmental toxin test	0.799	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Caffeine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence						Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,813	455	Sites	12	0.0025	0.046	0.2507	2e+05	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	219582

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	3	Sites	6	0.004	0.033	0.0812	0.126	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	58	9	Sites	16	0.051	0.064	0.17	0.37	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	14	2	Sites	14	0.018	0.03	0.0468	0.051	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.0589107	0.0589	0.0589	0.0589107	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			0.017	0.017		µg/L	
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	3	Samples	38	0	0		1.16e-05 ± 7e-07	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence						Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	266	34	Sites	13	0.05	0.19	0.427	1.5	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,324	1646	Sites	22	0.0025	0.076	0.55	44.4	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	12		0.0703		0.0909	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	28	Sites	74	0.0068603	0.0874	0.227	1.275935	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Bexfield et al. 2019 (Groundwater) [42]	2013 - 2015	1,106	11	Sites	0.99	0.1254262	0.246	0.974	1.359395	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	4	Samples	50	0	2.7e-06		1.59e-05 ± 6e-07	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.002	0.0145	0.0247	0.025	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	40	Samples	32				11.4	µg/L	
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	194	38	Samples	20				0.768	µg/L	
Maruya et al. 2016 (Ambient) [104]	2013	9	6	Sites	67	0.0144	0.0523	0.0958	0.125	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.0242	0.936	6.86	32.2	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence						Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	21	Sites	100	0.0189615	0.14	1.8	3.1	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000176	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.8183	days	
Boiling point	OPERA QSAR	286.293	degree C	
Boiling point	TEST QSAR	337.485	degree C	
Vapor pressure	OPERA QSAR	0.00000206	mmHg	
Vapor pressure	TEST QSAR	0.00000241	mmHg	
Solubility in water	OPERA QSAR	0.111749	mol/L	
Solubility in water	TEST QSAR	0.054325	mol/L	
Bioconcentration factor	OPERA QSAR	1.87705	no units	
Bioconcentration factor	TEST QSAR	1.31522	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	62.3044	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.0709947	no units	
Henry's Law constant	OPERA QSAR	0.00000155	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Caffeine

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
42	Bexfield, L.M., P.L. Toccalino, K. Belitz, W.T. Foreman, and E.T. Furlong. 2019. Hormones and pharmaceuticals in groundwater used as a source of drinking water across the United States. Environmental Science and Technology 53: 2950-2960.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
121	NIH. 2023. DailyMed Database. U.S. National Library of Medicine, National Institutes of Health (NIH). https://dailymed.nlm.nih.gov/dailymed/.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Calcium

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Calcium
CASRN:	7440-70-2
DTXSID:	DTXSID9050484
Use:	Element, used in alloys and deoxidizer for copper, beryllium, steel
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
96865	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Calcium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			HC 1987						[75]	Note: A TDI for calcium was not derived because "There is no evidence of adverse health effects specifically attributable to calcium in drinking water."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	31	mg/kg/day	IOM 2010		no adverse effects	general population	0.0338	180000	[97]	Note: the RfD equivalent was derived from an Upper Level of Intake (safe boundary at the high end of the range of intake per day) of 2500 mg/day which was divided by the average adult bodyweight of 80 kg

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Calcium
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	986	Sites	100	25	37453	96865	1116000	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,596	11593	Sites	100	20	35200	92700	5200000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	6	6	Sites	100	55	14950	60250	89700	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	660	653	Sites	99	100	49000	96000	1.2e+08	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	549	532	Sites	97	30	17600	49200	481000	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	221	215	Sites	97	780	22000	56950	121000	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	66	65	Sites	98	5	16300	75300	530000	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		39300		78400	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	11		Sites			30000	95000		µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	5,442	5427	Sites	100	100	43000	121000	1.3e+08	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	88	88	Sites	100	202	27700	52790	539000	µg/L	
Drinking Water Monitoring Data - ME (Ambient)	2009	1	1	Sites	100	25000	25000	25000	25000	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	13	Sites	100	2100	45700	103360	197000	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	344	341	Sites	99	810	24900	66730	140000	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	147	146	Sites	99	550	53000	94480	3e+05	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	57,201	57148	Sites	100	8	29000	106000	1.5e+08	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		38900		129000	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	757	Sites	100	42	32600	100400	476000	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	3610	11840	42395	89200	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	15,496	15496	Samples	100	100	193000	590000	74800000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	107,916	107486	Samples	100	10	1421715	14900000	193359000	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
EPA Ash Database (Wastewater)	1973 - 2014	36	36	Sites	100	5940	46079	130000	430000	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	16400	198000	666000	1190000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	7	7	Sites	100	553000	2110000	3760000	6300000	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	448	446	Samples	100	199.852644	60000	13800000	32300000	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	39	Sites	100	130	309000	818400	5550000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Calcium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
75	HC. 1987. Guideline Technical Document – Calcium. Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Ottawa, Ontario, Canada.
97	IOM. 2010. Dietary Reference Intakes for Calcium and Vitamin D. Institute of Medicine (IOM), National Academies of Science, Washington, D.C.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Carbaryl

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Carbaryl
CASRN:	63-25-2
DTXSID:	DTXSID9020247
Use:	Insecticide; veterinary medication
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.071

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	brain AChE inhibition in PND 11 pups.	all infants	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.4	90th Percentile	Finished Water	UCM2	1993 - 1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Carbaryl

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2017	Moser 2007 (MRID 47007001)	brain AChE inhibition in PND 11 pups.	all infants	0.143	10	[279]	NOTE: aRfD used in place of a chronic RfD--"Due to the rapid recovery of AChE (< 24 hours), the acute exposure is the duration of concern for non-cancer effects and the magnitude of AChEI does not increase with continued exposure. A quantitative chronic assessment is not considered appropriate for carbaryl because there are no chronic non-cancer effects that are more sensitive than AChEI."
Cancer Slope Factor (CSF)	0.000875	$(mg/kg/day)^{-1}$	OPP 2017	Hamada 1993 (MRID 42786901)	hemangiosarcomas in male mice	general population	0.0338	33.8	[279]	
Cancer Classification (CC)	L		OPP 2017						[279]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	1	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Lifetime Health Advisory	0.04	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	128	mg/kg	NIH HSDB	min
LD50	500	mg/kg	NIH HSDB	max
LOAEL	1440.62	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	3.1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1440.62	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.1	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	13	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00146893	mol/kg	TEST QSAR	
Ames mutagenicity test	0.655	no units	TEST QSAR	
Developmental toxin test	0.784	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Carbaryl
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	12,623	4	Sites	0.03	0.68	1	2.4	3	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,604	962	Sites	9	0.00038	0.012	0.09	33.5	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	41	814052	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	8	324

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	4	Sites	7	0.005	0.01	0.0162	0.017	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	171	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	820	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	255	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.002	0.005	0.069	0.3	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,747	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	77	1	Sites	1	0.75	0.75	0.75	0.75	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	1	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	422	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	15,676	1265	Sites	8	3e-04	0.019	0.16	27.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	2	Sites	0.91	0.0125	0.02	0.0511	0.0612	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.002	0.018	0.065	0.33	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	814	148	Sites	18	0.005	0.107	0.607	13	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	11	Sites	29	0.0032	0.0135	0.0899	0.257	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	796	6	Sites	0.75	5e-04	6e-04	0.0027	0.0033	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	35	Samples	26				1.3	µg/L	
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	144	14	Samples	10				0.044	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	5	Sites	24	0.0329	0.0626	0.11	0.11422	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	3	Sites	14	0.093	0.093	0.093	0.093	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000428	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53203	days	
Boiling point	OPERA QSAR	314.943	degree C	
Boiling point	TEST QSAR	311.019	degree C	
Vapor pressure	OPERA QSAR	0.00000136	mmHg	
Vapor pressure	TEST QSAR	0.00000562	mmHg	
Solubility in water	OPERA QSAR	0.00031257	mol/L	
Solubility in water	TEST QSAR	0.000414954	mol/L	
Bioconcentration factor	OPERA QSAR	8.88763	no units	
Bioconcentration factor	TEST QSAR	4.69894	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	250.472	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.35802	no units	
Henry's Law constant	OPERA QSAR	1.38E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Carbaryl
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
279	USEPA. 2017. Carbaryl: Draft Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2010-0230-0034. DP No. D433668. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Carbendazim

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Carbendazim
CASRN:	10605-21-7
DTXSID:	DTXSID4024729
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.005

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	carcinogen with linear mode of action	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	12.4	increased incidence of hepatocellular (adenoma/and/or carcinoma) tumors in the mouse	general population	OPP 2020; OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0625	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Carbendazim

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	OPP 2020; OPP 2021	MRID: 49547201	thyroid hormone and histopathology alterations in parental females and offspring of rats	general population	0.0338	830	[352]; [355]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Slope Factor (CSF)	0.00239	$(mg/kg/day)^{-1}$	OPP 2020; OPP 2021	Quest 1989; Brunsman 1999	increased incidence of hepatocellular (adenoma/and/or carcinoma) tumors in the mouse	general population	0.0338	12.4	[352]; [355]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	C		OPP 2020; OPP 2021						[352]; [355]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.93	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.14	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.0134	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.16	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	15000	mg/kg	NIH HSDB	max
LD50	5000	mg/kg	NIH HSDB	min
LOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	62.5	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	62.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	12	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	35	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	40.7	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	11.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	40.7	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00827942	mol/kg	TEST QSAR	
Ames mutagenicity test	0.605	no units	TEST QSAR	
Developmental toxin test	0.884	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Carbendazim
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,248	308	Sites	14	0.00014	0.0134	0.0625	3.65	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	7	1	Sites	14	0.003	0.003	0.003	0.0075	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,900	310	Sites	16	2e-04	0.0154	0.0918	4.87	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	109	1	Sites	0.92	0.005	0.005	0.0153	0.0179	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	7	3	Sites	43	0.003	0.003	0.033	0.121	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	82	36	Sites	44	0.0043	0.0203	0.0918	0.319	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	5	Sites	0.86	0.0013	0.0054	0.101	0.157	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.00981	0.701	3.88	9.5767	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000229	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.46684	days	
Boiling point	OPERA QSAR	275.321	degree C	
Boiling point	TEST QSAR	374.376	degree C	
Vapor pressure	OPERA QSAR	7.59E-10	mmHg	
Vapor pressure	TEST QSAR	1.17E-08	mmHg	
Solubility in water	OPERA QSAR	15276.081	µg/L	
Solubility in water	TEST QSAR	173566.297	µg/L	
Bioconcentration factor	OPERA QSAR	2.51113	no units	
Bioconcentration factor	TEST QSAR	1.6293	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	223.839	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.51897	no units	
Henry's Law constant	OPERA QSAR	1.4E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Carbendazim

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
352	USEPA. 2020. Thiophanate-Methyl and Carbendazim: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
355	USEPA. 2021. Carbendazim and 2-Aminobenzimidazole. Amended Acute, Chronic, and Cancer Dietary Exposure and Risk Assessments in Support of the Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Carbon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Carbon
CASRN:	7440-44-0
DTXSID:	DTXSID9027651
Use:	As charcoal used as a fuel; as activated charcoal it is used for purification and filtration; as graphite used in steelmaking, batteries
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
7820	90th Percentile or Maximum	Ambient Water	NAWQA	1991 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Carbon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						Unlimited	8/9/2024				

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Carbon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,027	10,224	Sites	93	100	3,080	7,820	7,350,000	µg/L	Organic carbon
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	77	77	Sites	100	1,760	29,900	57,700	99,700	µg/L	Inorganic carbon

Pesticide Application Data	Number of States	Amount Applied	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of	Amount Released
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	750,000,000 - 1,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	32	24	Sites	75	200	915	3104	5620	µg/L	Organic carbon
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	31	29	Sites	94	200	1400	3684	11000	µg/L	Organic carbon
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	91	86	Sites	94	1300	10400	36000	153000	µg/L	Carbon
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	24,939	23409	Sites	94	100	3710	11200	1.90E+07	µg/L	Organic carbon
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,057	1,006	Sites	95	100	1,100	7,800	206,000	µg/L	Inorganic carbon
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		2.12E-08	

Biomonitoring Data	Detection at 90th	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	18.9477	days	
Boiling point	OPERA QSAR	-161.359	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	456311	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	75799.0188	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3.18035	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.0888	no units	
Henry's Law constant	OPERA QSAR	0.0627508	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Carbon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference

Carbon dioxide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Carbon dioxide
CASRN:	124-38-9
DTXSID:	DTXSID4027028
Use:	Atmospheric gas
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
44000	90th Percentile or Maximum	Ambient Water	NAWQA	1991 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Carbon dioxide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						Unlimited	8/9/2024				

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Carbon dioxide
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,583	11511	Sites	99	100	4100	44000	53500000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	90,000,000,000 - 100,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	38	38	Sites	100	100	14500	66500	188000	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	55	55	Sites	100	400	14000	68600	1560000	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	2		Sites			58500	112000		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	53,769	53370	Sites	99	100	4100	34000	3.19e+11	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000756	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	14.3548	days	
Boiling point	OPERA QSAR	-78.2676	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	47854.5	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	1492358.393	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR	4.03049	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	11.5449	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.8281	no units	
Henry's Law constant	OPERA QSAR	0.000271588	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Carbon dioxide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Carbon disulfide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Carbon disulfide
CASRN:	75-15-0
DTXSID:	DTXSID6023947
Use:	Former insecticide/fumigant; rubber additive; industrial solvent; chemical intermediate
Chemical Notes:	Canceled pesticide. Last end of use date: 10/10/1989.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00083

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	600	fetal toxicity and fetal malformations	females of reproductive age	IRIS 1987

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.5	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Carbon disulfide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	IRIS 1987	Hardin et al. 1981	fetal toxicity and fetal malformations	females of reproductive age	0.0354	600	[154]	Note: Females of reproductive age chosen as the target population because critical effects were seen in fetuses and the exposure factor for females of reproductive age is more protective than that of pregnant women. Also, cancer was not evaluated in this assessment.
			ATSDR 1996						[7]	Note: No information identified from CCL 5 to report. Also, cancer was not evaluated.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Systemic, Neurological	200	Gao, 2014				8/1/1995	2/13/2020	528	10	71	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	
Notification Level	0.16	mg/l	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.7	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.3	ppm	CDC ATSDR	
Reference Concentration (RfC)	0.7	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	800	$\mu g/m^3$	CalEPA OEHHA Chemical Database	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2125	mg/kg	NIH HSDB	min
LD50	3188	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.705	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Carbon disulfide

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,652	755	Sites	13	0.01	0.1	0.5	34	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	28	8,505,570

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	250,000,000 - 500,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	54	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	127	8	Sites	6	0.5	0.73	1.6	8.72	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	1	Sites	5	0.1	0.1	0.1	0.1	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	9	Sites	35	0.01649	0.0211	0.151	0.2946	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	799	20	Sites	3	0.51	0.74	3.4	240	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	8,031	435	Sites	5	0.01	0.2	1.79	76	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	14	Sites	37	0.01248	0.0357	0.137	0.2378	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	120	Sites	18	0.0102	0.0749	0.61	4.2	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000225	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	17.6925	days	
Boiling point	OPERA QSAR	46.014	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	359.09	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	1186036.883	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR	19.4828	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	218.392	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.94017	no units	
Henry's Law constant	OPERA QSAR	0.0143349	atm-m^3/mol	

Carbon disulfide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
7	ATSDR. 1996. Toxicological Profile for Carbon Disulfide. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
154	USEPA. 1987. Chemical Assessment Summary, Carbon Disulfide. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

Chlordecone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlordecone
CASRN:	143-50-0
DTXSID:	DTXSID1020770
Use:	Formerly as insecticide, fungicide, miticide
Chemical Notes:	Canceled pesticide. Last end of use date: 4/4/1977.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	67

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	carcinogen with linear MOA		

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.003	liver hepatocellular carcinoma	general population	IRIS 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.2	90th Percentile	All Ambient Water	NWIS	2008 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlordecone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0003	mg/kg/day	IRIS 2009	Larson et al. 1979	renal lesions (glomerulosclerosis) in female rats	general population	0.0338	2	[230]	NOTE: canceled pesticide registration, OPP does not provide a publicly-available health assessment for chlordecone; the chlordecone entry in the IRIS database was preserved at the request of EPA program offices and regions and serves as the basis of the HRL
Cancer Slope Factor (CSF)	10	$(mg/kg/day)^{-1}$	IRIS 2009	NCI 1976	liver hepatocellular carcinoma	general population	0.0338	0.003	[230]	
Reference Dose (RfD) or Equivalent	0.0009	mg/kg/day	ATSDR 2020	Larson et al. 1979	Renal effects	general population	0.0338	5	[31]	
Cancer Classification (CC)	L		IRIS 2009						[230]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	
Cancer Slope Factor (CSF)	16	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Inhalation Unit Risk (IUR)	0.0046	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.003	mg/kg/day	CDC ATSDR	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2550	mg/kg	NIH HSDB	max
LD50	65	mg/kg	NIH HSDB	min
LOAEL	0.4	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	6	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.4	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	6	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	58	percent	EPA Chemistry Dashboard	
TD50	0.705	mg/kg/day	NIH CPDB	min
TD50	29.3	mg/kg/day	NIH CPDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00038815	mol/kg	TEST QSAR	
Ames mutagenicity test	0.529	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 3 - >= 0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Chlordecone

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	71	2	Sites	3	0.2	0.2	0.2	0.2	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		1.53E-10	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	914.494	days	
Boiling point	OPERA QSAR	372.926	degree C	
Boiling point	TEST QSAR	354.456	degree C	
Vapor pressure	OPERA QSAR	0.000000224	mmHg	
Vapor pressure	TEST QSAR	0.000000465	mmHg	
Solubility in water	OPERA QSAR	2776.8526	µg/L	
Solubility in water	TEST QSAR	1138.2152	µg/L	
Bioconcentration factor	OPERA QSAR	1547.74	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	15867	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.41094	no units	
Henry's Law constant	OPERA QSAR	0.000414781	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Chlordecone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
31	ATSDR. 2020. Toxicological Profile for Mirex and Chlordecone. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
230	USEPA. 2009. Chemical Assessment Summary, Chlordecone (Kepone). U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

Chlorimuron-ethyl

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlorimuron-ethyl
CASRN:	90982-32-4
DTXSID:	DTXSID0023955
Use:	Used as sulfonylurea herbicide to control weeds in soybeans and peanut
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000095

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	500	Based on hematologic changes (increased hematocrit, hemoglobin, erythrocyte counts in mid and high dose dogs) atrophy of thymus and prostate, increased absolute and relative liver weights.	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0475	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlorimuron-ethyl

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.09	mg/kg/day	OPP 2015	MRIDs: 00149579; 00132745	Based on hematologic changes (increased hematocrit, hemoglobin, erythrocyte counts in mid and high dose dogs) atrophy of thymus and prostate, increased absolute and relative liver weights.	general population	0.0338	500	[253]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2015						[253]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	1	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.301	no units	TEST QSAR	
Developmental toxin test	1.027	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Chlorimuron-ethyl
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,207	84	Sites	2	0.00024	0.0134	0.0475	0.867	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	17,130

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	2	0.006	0.006	0.006	0.006	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.01	0.012	0.0128	0.013	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	4	Sites	40	0.0093	0.022	0.0384	0.078	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,501	129	Sites	3	0.00017	0.0132	0.0708	0.852	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	2	Sites	0.91	0.01	0.0158	0.0205	0.0216	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	4	Sites	40	0.0093	0.023	0.0554	0.347	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.1085	0.108	0.108	0.1085	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	3	Sites	0.43	0.0011	0.0014	0.00148	0.0015	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000131	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.27962	days	
Boiling point	OPERA QSAR	264.66	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	3.78E-11	mmHg	
Vapor pressure	TEST QSAR	1.97E-11	mmHg	
Solubility in water	OPERA QSAR	1186177.79	µg/L	
Solubility in water	TEST QSAR	84890.42408	µg/L	
Bioconcentration factor	OPERA QSAR	7.19268	no units	
Bioconcentration factor	TEST QSAR	1.1885	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	109.606	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.49725	no units	
Henry's Law constant	OPERA QSAR	5.57E-11	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Chlorimuron-ethyl

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
253	USEPA. 2015. Chlorimuron Ethyl. Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 0426094.

Chlorodifluoromethane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlorodifluoromethane
CASRN:	75-45-6
DTXSID:	DTXSID6020301
Use:	Refrigerant; low-temperature solvent; fluorocarbon resins, especially tetrafluoroethylene polymers; gas
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		9	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.2	90th Percentile or Maximum	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlorodifluoromethane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent			IRIS 1993						[187]	Note: Reference concentration (RfC) is the only tox value available
Cancer Classification (CC)			IRIS 1993						[187]	Note: Cancer not evaluated.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						8/1/2002	3/25/2020	130	0	2	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Reference Concentration (RfC)	50	mg/m^3	EPA IRIS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.574	no units	TEST QSAR	
Developmental toxin test	0.57	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Chlorodifluoromethane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	286	Sites	6	0.08	0.22	1.2	250	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,910	117	Sites	6	0.01	0.08	0.866	179	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	18	1,024,512

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000,000 - 250,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.04688	0.0469	0.0469	0.04688	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,106	91	Sites	4	0.01	0.13	0.766	7.86	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.03401	0.301	0.515	0.5687	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	11	Sites	2	0.02	0.08	0.18	0.56	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000168	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.58064	days	
Boiling point	OPERA QSAR	-40.6439	degree C	
Boiling point	TEST QSAR	-10.361	degree C	
Vapor pressure	OPERA QSAR	7210.55	mmHg	
Vapor pressure	TEST QSAR	3273.41	mmHg	
Solubility in water	OPERA QSAR	2771181.913	µg/L	
Solubility in water	TEST QSAR	13767839.87	µg/L	
Bioconcentration factor	OPERA QSAR	10.18	no units	
Bioconcentration factor	TEST QSAR	4.19759	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	40.8463	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.07955	no units	
Henry's Law constant	OPERA QSAR	0.0406205	atm-m^3/mol	

Chlorodifluoromethane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
187	USEPA. 1993. Chemical Assessment Summary, Chlorodifluoromethane. U.S. Environmental Protection Agency, National Center for Environmental Protection, Integrated Risk Information System (IRIS), Washington, D.C.

Chloromethane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chloromethane
CASRN:	74-87-3
DTXSID:	DTXSID0021541
Use:	Foaming agent; in organic synthesis; naturally-occurring gas
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		9	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.7	90th Percentile	Finished Water	UCMR 3	2001-2003

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chloromethane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0036	mg/kg/day	OW 1989	Repko et al., 1976	mild neurological effects	general population	0.0338	21	[165]	Note: In the most recently updated OW DWSHA Table (2018; https://www.epa.gov/system/files/documents/2022-01/dwtable2018.pdf), this RfD was removed.
Cancer Classification (CC)	I		PPRTV 2012						[243]	I = Inadequate evidence to determine carcinogenic potential
			PPRTV 2012						[243]	Note: Oral toxicity values were not derived because "Chloromethane exists primarily as a gas and no adequate oral exposure studies are available."
Cancer Classification (CC)	D		IRIS 2001						[195]	D = Not classifiable as to human carcinogenicity
			IRIS 2001						[195]	Note: Oral toxicity values were not derived because "Methyl chloride exists primarily as a gas."
Cancer Classification (CC)	C		OW 1989						[165]	Note: In the most recently updated OW DWSHA Table (2018; https://www.epa.gov/system/files/documents/2022-01/dwtable2018.pdf), this CC was updated to reflect the 2012 PPRTV of I. C = Possible human carcinogen.
			ATSDR 2023						[35]	Note: ATSDR concluded that there are insufficient data for derivation of oral MRLs for chloromethane.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.4	mg/l	EPA DWSHA 2018	
Acute inhalation Minimal Risk Level (MRL)	0.5	ppm	CDC ATSDR	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic inhalation Minimal Risk Level (MRL)	0.03	ppm	CDC ATSDR	
Intermediate Inhalation Minimal Risk Level (MRL)	0.3	ppm	CDC ATSDR	
Provisional Subchronic RfC	3	mg/m^3	EPA PPRTV	
Reference Concentration (RfC)	0.09	mg/m^3	EPA IRIS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1800	mg/kg	NIH HSDB	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00570164	mol/kg	TEST QSAR	
Ames mutagenicity test	0.487	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Chloromethane
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	138	Sites	3	0.2	0.4	1.7	11.3	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	23,478	528	Sites	2	0.00073	1.4	5	312	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	20,246	248	Sites	1	0.01	1.9	12.2	550	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	6,835	184	Sites	3	0.02	0.1	0.2	320	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	20	1,019,341

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	2	Sites	4	0.1	0.1	0.1	0.1	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	398	40	Sites	10	0.19	0.745	1.6	35	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	899	83	Sites	9	0.5	1.1	3.85	44.6	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	28	Sites	2	0.07	1.42	4.73	320	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	20	0	Sites	0						
Bradley et al. 2018 (Finished) [44]	2016	26	6	Sites	23	0.1607	0.186	0.233	0.2694	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,242	218	Sites	5	0.076	0.75	2	21.2	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	3	2	Sites	67	0.49	36.2	64.8	72	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	133	17	Sites	13	0.5	0.7	3.66	4.9	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	14	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,666	8	Sites	0.48	0.65	0.83	5.04	6.3	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	135	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,991	219	Sites	2	0.1	0.42	2	2400	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	2	Sites	0.29	0.3	1.45	2.37	2.6	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000154	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	13.7954	days	
Boiling point	OPERA QSAR	-24.0301	degree C	
Boiling point	TEST QSAR	-0.434	degree C	
Vapor pressure	OPERA QSAR	4252.6	mmHg	
Vapor pressure	TEST QSAR	1866.38	mmHg	
Solubility in water	OPERA QSAR	5709358.71	µg/L	
Solubility in water	TEST QSAR	21144909.06	µg/L	
Bioconcentration factor	OPERA QSAR	9.68608	no units	
Bioconcentration factor	TEST QSAR	3.8815	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	12.5443	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.0801	no units	
Henry's Law constant	OPERA QSAR	0.00883123	atm-m^3/mol	

Chloromethane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
35	ATSDR. 2023. Toxicological Profile for Chloromethane. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
165	USEPA. 1989. Chloromethane Health Advisory. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
195	USEPA. 2001. Chemical Assessment Summary, Chloromethane. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
243	USEPA. 2012. Provisional Peer-Reviewed Toxicity Values for Chloromethane. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Chlorothalonil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlorothalonil
CASRN:	1897-45-6
DTXSID:	DTXSID0020319
Use:	Fungicide; bacteriocide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0054

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	4	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	kidney effects (epithelial hyperplasia in the renal proximal convoluted tubules of female rats)	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.535	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlorothalonil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	OPP 2021	MRID 4125052	kidney effects (epithelial hyperplasia in the renal proximal convoluted tubules of female rats)	general population	0.0338	100	[356]	
Cancer Classification (CC)	L		OPP 2021						[356]	Note: A Science Advisory Panel decision (06-June-1998) supports the use of a threshold approach in risk assessment for chlorothalonil. No oral slope factor was derived. L = Likely to be carcinogenic to humans.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.2	mg/l	EPA DWSHA 2018	
Acute/Short-term Health-Based Guidance Value	0.02	mg/l	MN DOH	
Cancer Slope Factor (CSF)	0.017	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.001	mg/l	MN DOH	Gastrointestinal system, Hepatic (liver system), Renal (kidney) system
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	Cancer value of application of dual guidance
Chronic Health-Based Guidance Value	0.0006	mg/l	MN DOH	Cancer value
Lifetime Health Advisory	0.0015	mg/l	EPA DWSHA 2018	
Subchronic Health-Based Guidance Value	0.002	mg/l	MN DOH	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	max
LD50	242	mg/kg	NIH HSDB	min
LOAEL	0.9	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.7	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	46	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	2.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
TD50	1180	mg/kg/day	NIH CPDB	min
TD50	20100	mg/kg/day	NIH CPDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00489779	mol/kg	TEST QSAR	
Ames mutagenicity test	0.05	no units	TEST QSAR	
Developmental toxin test	0.29	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Chlorothalonil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,324	21	Sites	0.39	0.01	0.09	0.535	3.33	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	11,497,437	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	6	247,509

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	17	1	Sites	6	0.71	0.71	0.71	0.71	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	69	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	12	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	739	3	Sites	0.41	0.018	0.033	0.0354	0.036	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,256	61	Sites	2	1e-04	0.0074	0.26	26.2	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	1	Sites	0.46	3.2	3.2	3.2	3.2	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	223	11	Sites	5	0.0043	0.0076	0.113	0.187	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	5	Sites	13	0.0033	0.0061	0.00638	0.0065	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	13	Sites	62	0.00421	0.0222	0.0901	0.13986	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000238	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.67662	days	
Boiling point	OPERA QSAR	349.957	degree C	
Boiling point	TEST QSAR	341.73	degree C	
Vapor pressure	OPERA QSAR	0.000000573	mmHg	
Vapor pressure	TEST QSAR	0.000218776	mmHg	
Solubility in water	OPERA QSAR	640.819	µg/L	
Solubility in water	TEST QSAR	6089.11	µg/L	
Bioconcentration factor	OPERA QSAR	63.2267	no units	
Bioconcentration factor	TEST QSAR	44.2	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1820.27	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.97569	no units	
Henry's Law constant	OPERA QSAR	0.00000201	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Chlorothalonil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
356	USEPA. 2021. Chlorothalonil: Revised Human Health Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2011-0840-0080. DP No. D457661. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Chlorpyrifos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlorpyrifos
CASRN:	2921-88-2
DTXSID:	DTXSID4020458
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.045

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
	reproductive and developmental effects	1	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.868	RBC AChE inhibition	all infants	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.039	90th Percentile	Finished Water	UCMR 4	2018 - 2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlorpyrifos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	4.34	µg/L	OPP 2020	Nolan et al., 1982; Kisicki et al., 1999	RBC AChE inhibition	all infants		0.868	[331]	NOTE: Drinking Water Steady State PAD for chlorpyrifos oxon for infants < 1 year = POD/LOC in units of ug/L; Derived from Drinking Water PBPK Modeled Doses Corresponding to 10% RBC AChE Inhibition – 10X FQPA SF retained; HRL derived by applying a default 0.2 relative source contribution to the drinking water ssPAD. OPP anticipates 100% conversion to oxon in DW after treatment, therefore only derived DW PAD for oxon.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.03	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.003	mg/kg/day	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	0.002	mg/l	MN DOH	Acute nervous system value
Acute/Short-term Health-Based Guidance Value	0.0006	mg/l	MN DOH	Short-term nervous system value
Chronic Health-Based Guidance Value	0.0006	mg/l	MN DOH	
Drinking Water Guideline Value	0.03	mg/l	WHO Drinking Water Quality Guidelines	
Intermediate Minimal Risk Level (MRL)	0.003	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.002	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.09	mg/l	Canadian Drinking Water Guidelines	
Maximum Allowable Daily Level	0.58	µg/day	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.0006	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1000	mg/kg	NIH HSDB	max
LD50	26.9	mg/kg	NIH HSDB	min
LOAEL	0.03	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.01	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	24	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.75	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	0.15	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	0.75	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000304789	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.097	no units	TEST QSAR	
Developmental toxin test	0.595	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Chlorpyrifos
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020	5,028	2	Sites	0.04	0.0305	0.0352	0.039	0.04	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,584	591	Sites	6	0.00022	0.007	0.0299	0.57	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	7,402,076	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	6	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Zhang et al. 2019 (Finished) [423]	2015 - 2016	18	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	15,646	677	Sites	4	0.00035	0.0093	0.05	11.3	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	2,316	520	Sites	22	1.4e-06	0.023	0.21	9.4	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	30	Sites	79	2.42e-05	0.000322	0.00396	0.0904	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	6e-04	6e-04	6e-04	6e-04	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50	0.009	0.0095	0.0099	0.01	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	1	Samples	0.8				0.01	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	15	Sites	71	2e-04	0.00065	0.0028	0.0098	µg/L	
Zhang et al. 2019 (Ambient) [423]	2015 - 2016	17	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000436	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.74463	days	
Boiling point	OPERA QSAR	364.076	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000203	mmHg	
Vapor pressure	TEST QSAR	0.0000308	mmHg	
Solubility in water	OPERA QSAR	1153.3753	µg/L	
Solubility in water	TEST QSAR	827.3452	µg/L	
Bioconcentration factor	OPERA QSAR	1515.77	no units	
Bioconcentration factor	TEST QSAR	380.189	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5000.97	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.95863	no units	
Henry's Law constant	OPERA QSAR	0.00000292	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Chlorpyrifos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
331	USEPA. 2020. Chlorpyrifos: Third Revised Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2008-0850-0944. DP No. D456427. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
423	Zhang, H., West, D., Shi, H., Ma, Y., Adams, C. and Eichholz, T., 2019. Simultaneous Determination of Selected Trace Contaminants in Drinking Water Using Solid-Phase Extraction-High Performance Liquid Chromatography-Tandem Mass Spectrometry. Water, Air, & Soil Pollution, 230(2), p.28.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Chlorsulfuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Chlorsulfuron
CASRN:	64902-72-3
DTXSID:	DTXSID7023980
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00025

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	decreased body weights and body weight gains in males.	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.076	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Chlorsulfuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2015	MRID: 00086003	decreased body weights and body weight gains in males.	general population	0.0338	300	[254]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2015						[254]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5545	mg/kg	NIH HSDB	min
LD50	6293	mg/kg	NIH HSDB	max
LOAEL	1500	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	82.3	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	18.5	mg/kg/day	EPA Toxicity Reference Database	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0176198	mol/kg	TEST QSAR	
Ames mutagenicity test	0.16	no units	TEST QSAR	
Developmental toxin test	1.137	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Chlorsulfuron
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,167	46	Sites	2	0.0026	0.0231	0.076	0.32	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	35	62,366	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	43,073

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	8	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,384	16	Sites	1	0.0026	0.0112	0.0458	0.124	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	1	Sites	0.88	0.0056	0.0056	0.0056	0.0056	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	1	Sites	12	0.0028	0.0028	0.0028	0.0028	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	60	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	1	Sites	0.17	0.0043	0.0043	0.0043	0.0043	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		4.46E-09	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.27775	days	
Boiling point	OPERA QSAR	264.571	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.25E-11	mmHg	
Vapor pressure	TEST QSAR	6.49E-11	mmHg	
Solubility in water	OPERA QSAR	18350953.5	µg/L	
Solubility in water	TEST QSAR	122349.8268	µg/L	
Bioconcentration factor	OPERA QSAR	8.46579	no units	
Bioconcentration factor	TEST QSAR	1.90108	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	154.781	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.99948	no units	
Henry's Law constant	OPERA QSAR	1E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Chlorsulfuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
254	USEPA. 2015. Chlorsulfuron. Draft Human health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 0425536
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Clopyralid

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Clopyralid
CASRN:	1702-17-6
DTXSID:	DTXSID9029221
Use:	Herbicide, food additive
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	5	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	890	increased epithelial hyperplasia and thickening of the limiting ridge of the stomach	general population	OPP 2020; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.124	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Clopyralid

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OPP 2020; OPP 2019	Barna-Lloyd et al. 1985 and 1986	increased epithelial hyperplasia and thickening of the limiting ridge of the stomach	general population	0.0338	890	[332]; [305]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer OPP assessment exists but does not contribute new data for HRL
Cancer Classification (CC)	NL		OPP 2020; OPP 2019						[332]; [305]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.96	mg/l	Health-based screening levels from USGS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4300	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	150	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	5000	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	5000	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00995405	mol/kg	TEST QSAR	
Ames mutagenicity test	0.114	no units	TEST QSAR	
Developmental toxin test	0.26	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Clopyralid
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,866	33	Sites	0.56	0.01	0.035	0.124	0.53	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	47	2,234,882	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	6	Sites	35	0.0057	0.012	0.0474	0.7	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,289	39	Sites	0.91	0.01	0.06	0.162	22.6	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	5	Sites	2	0.005661	0.00566	0.0227	0.024	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	4	Sites	33	0.0057	0.012	0.036	0.36	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000507	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54155	days	
Boiling point	OPERA QSAR	286.103	degree C	
Boiling point	TEST QSAR	293.982	degree C	
Vapor pressure	OPERA QSAR	0.0000121	mmHg	
Vapor pressure	TEST QSAR	0.0000647	mmHg	
Solubility in water	OPERA QSAR	140579712	µg/L	
Solubility in water	TEST QSAR	5798304	µg/L	
Bioconcentration factor	OPERA QSAR	3.76572	no units	
Bioconcentration factor	TEST QSAR	2.5527	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	36.3208	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.06176	no units	
Henry's Law constant	OPERA QSAR	4.91E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Clopyralid

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
305	USEPA. 2019. Clopyralid. Draft Human Health Risk Assessment for Registration Review of the Herbicide. EPA-HQ-OPP-2014-0167-0031. DP No. D442247. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
332	USEPA. 2020. Clopyralid: Human Health Risk Assessment for Proposed Uses on Bulb Onion Subgroup (3-07B), Caneberry Subgroup (13-07 A), Wheatgrass, and a Label Amendment for Strawberry. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D455484.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Clothianidin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Clothianidin
CASRN:	210880-92-5
DTXSID:	DTXSID2034465
Use:	Insecticide used on food crops
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.31

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	580	decreased body weight gains and delayed sexual maturation, decreased absolute thymus weights in F1 pups and increased stillbirths in both generations (all in rats)	general population	OPP 2022; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
180		EDWC GW	OPP	2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Clothianidin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.098	mg/kg/day	OPP 2022; OPP 2019	MRIDs: 45422714-16, 45422825-26	decreased body weight gains and delayed sexual maturation, decreased absolute thymus weights in F1 pups and increased stillbirths in both generations (all in rats)	general population	0.0338	580	[375]; [306]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2022) exists but does not contribute new data for HRL
Cancer Classification (CC)	NL		OPP 2022; OPP 2019						[375]; [306]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1.7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.25	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.2	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.2	mg/l	MN DOH	
Health-Based Screening Level	0.63	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.2	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	389	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	31.2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	322.3	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	322.3	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	9.8	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	254.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	40.9	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	19.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	42.1	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00239332	mol/kg	TEST QSAR	
Ames mutagenicity test	0.998	no units	TEST QSAR	
Developmental toxin test	0.597	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Clothianidin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	26	86,730	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	3	Sites	30	0.008	0.008	0.0102	0.018	µg/L	
Klarich et al. 2017 (Finished) [99]	2016	20	16	Sites	80	0.00389	0.0119	0.0291	0.03346	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	374	104	Sites	28	9e-04	0.0092	0.0646	1.34	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	3	Sites	30	0.008	0.008	0.0265	0.045	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	320	55	Sites	17	0.00238	0.0923	0.539	1.65	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	9	Sites	24	0.0026	0.0113	0.0438	0.0663	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	6	Sites	29	0.00313	0.0228	0.036	0.0384	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater (acute)	2022	OPP	180	ug/L	Pesticide in Water Calculator (PWC), v1.52	The critical effect of developmental and reproductive issues in F1 generation pups is considered a less-than-chronic response in a sensitive population. To be protective of this population, the modeled ground water acute concentration was selected as the occurrence concentration for clothianidin.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000352	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.55227	days	
Boiling point	OPERA QSAR	326.576	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000162	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	337161.8581	µg/L	
Solubility in water	TEST QSAR	500456.0249	µg/L	
Bioconcentration factor	OPERA QSAR	14.1743	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	6.41952	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.701681	no units	
Henry's Law constant	OPERA QSAR	1.87E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Clothianidin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
99	Klarich, K.L., Pflug, N.C., DeWald, E.M., Hladik, M.L., Kolpin, D.W., Cwiertny, D.M. and LeFevre, G.H., 2017. Occurrence of neonicotinoid insecticides in finished drinking water and fate during drinking water treatment. Environmental Science & Technology Letters, 4(5), pp.168-173.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
306	USEPA. 2019. Clothianidin. Human Health Risk Assessment to Address Residues from New/Amended Uses of Thiamethoxam. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
375	USEPA. 2022. Clothianidin. Human Health Risk Assessment to Address Exposure Associated with a New Tolerance for Thiamethoxam. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Cobalt

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Cobalt
CASRN:	7440-48-4
DTXSID:	DTXSID1031040
Use:	Use data are for cobaltous chloride: Formerly in medicines; as germicide; naturally-occurring
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
2.6

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	9	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2	decreased iodine uptake in humans	females of reproductive age	PPRTV 2008

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
5.2	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Cobalt

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0003	mg/kg/day	PPRTV 2008	Roche and Layrisse 1956	decreased iodine uptake in humans	females of reproductive age	0.0354	2	[226]	
			ATSDR 2004						[11]	Note: ATSDR did not derive a chronic oral MRL for cobalt due to insufficient data; a new draft 2023 assessment reaches the same conclusion.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hematologic, Systemic	10	Nejad, 2014	Immune	10	Nejad, 2014	8/1/2007	10/22/2019	6161	13	287	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.03	mg/kg/day	CDC ATSDR	
Chronic inhalation Minimal Risk Level (MRL)	0.1	µg/m^3	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.03	mg/kg/day	CDC ATSDR	
Provisional Inhalation Unit Risk (IUR)	9	(mg/m^3)$^{-1}$	EPA PPRTV	
Provisional Reference Concentration (RfC)	0.000006	mg/m^3	EPA PPRTV	
Provisional Subchronic RfD	0.003	mg/kg/day	EPA PPRTV	
Provisional Subchronic RfC	0.00002	mg/m^3	EPA PPRTV	
Cancer Classification (CC)	2A	no units	WHO IARC	2A = Probably carcinogenic to humans
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Cobalt
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,922	247	Sites	5	1	1.8	5.2	1097.099	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	3	Sites	0.3	6	10	10	11	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,307	4701	Sites	64	0.007	0.157	1.67	684	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	38	489,779

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	2	Sites	100	0.008	0.042	0.0692	0.076	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	70	33	Sites	47	0.002	0.108	0.3	1.07	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	18	5	Sites	28	0.029	0.119	1.2	1.8	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	12	Sites	46	0.04	0.11	0.147	0.18	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites							
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	139	47	Sites	34	0.009	0.166	2.1	29	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	19,049	9930	Sites	52	0.005	0.258	10	10200	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	602	Sites	80	0.022	0.0775	0.881	52.4	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.023545149	0.206	0.708	3.766349	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	5,859	5834	Samples	100	0.02	2	12	33000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	311	186	Samples	60	0.1	34.2	2500	40000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	44	14	Sites	32	0.08	1.29	9.74	25	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	39	Sites	98	138	6660	109540	182000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	2	Sites	25	3.2	15	28.7	50	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	5	5	Samples	100	0.510648	8.45	21.4	29.1	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	32	Sites	82	0.179	1.45	35.2	3110	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	0.31	µg/l	
NHANES biomonitoring detection in urine (1999-2016)	1.16	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Cobalt

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
11	ATSDR. 2004. Toxicological Profile for Cobalt. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
226	USEPA. 2008. Provisional Peer Reviewed Toxicity Values for Cobalt (CASRN 7440-48-4). EPA/690/R-08/008F. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Coumaphos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Coumaphos
CASRN:	56-72-4
DTXSID:	DTXSID2020347
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.2

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
8	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.2	2 gen reproduction study: inhibition of RBC AChE in F0 and F1 young adults at 90 days in both males and females	females of reproductive age	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.039	90th Percentile	All Ambient Water	SURF	1990 - 2018

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Coumaphos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00004	mg/kg/day	OPP 2016	Eigenberg and Elcock, 1993; MRID 43061701 (unpublished)	2 gen reproduction study: inhibition of RBC AChE in F0 and F1 young adults at 90 days in both males and females	females of reproductive age	0.0354	0.2	[267]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, a more recent OPP assessment has been published and used to derive an HRL. Also, a steady-state population-adjusted dose (ssPAD) was used as the reference dose because no chronic PADs were obtained and acetylcholinesterase inhibition does not increase with repeated exposure.
Cancer Classification (CC)	NL		OPP 2016						[267]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.017	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0025	mg/kg/day	EPA HHBP	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	13	mg/kg	NIH HSDB	min
LD50	80	mg/kg	NIH HSDB	max
LOAEL	0.3	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.024	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	23	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.1	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	0.1	mg/kg/day	EPA Toxicity Reference Database	
TD50	1.58	mg/kg/day	NIH CPDB	min
TD50	98.1	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000378	mol/kg	TEST QSAR	
Ames mutagenicity test	0.139	no units	TEST QSAR	
Developmental toxin test	0.726	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Coumaphos
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	334	0	Sites	0						
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	135	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	846	1	Sites	0.12	0.014	0.027	0.039	0.048	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Surface Water (acute)	2016	OPP	0.1	ug/L	Tier II Pesticide Root Zone Model/Exposure Analysis Modeling System	The modeled surface water acute concentration provided by the most recent EPA OPP assessment was selected as the occurrence concentration for coumaphos. This value coincides with the critical effect of acetylcholinesterase inhibition identified in the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000182	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.84494	days	
Boiling point	OPERA QSAR	404.198	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	9.73E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000668	mmHg	
Solubility in water	OPERA QSAR	1505.454	µg/L	
Solubility in water	TEST QSAR	9504.312	µg/L	
Bioconcentration factor	OPERA QSAR	554.431	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1132	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.12844	no units	
Henry's Law constant	OPERA QSAR	5.75E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Coumaphos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
267	USEPA. 2016. Coumaphos: Revised Acute and Steady State Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments to Support Registration Review. PC Code: 036501; DP Number: D436575. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Cyfluthrin

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Cyfluthrin
CASRN:	68359-37-5
DTXSID:	DTXSID5035957
Use:	Insecticide; medication
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.026

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	78	decreased motor activity	children	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2		EDWC SW	OPP	2019

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Cyfluthrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0117	mg/kg/day	OPP 2019	Wolansky et al. 2006	decreased motor activity	children	0.15	78	[126]	Note: A chronic dietary endpoint was not derived for cyfluthrin because repeated chronic exposure is not expected to result in a point of departure lower than which results from acute exposure; The HRL is based on the EPA's acute Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	NL		OPP 2019						[126]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.078	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0117	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.15	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Inhalation LOAEL	0.0000551	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation LOAEL	0.199	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
Inhalation NOAEL	0.0000551	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation NOAEL	0.199	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
LD50	140	mg/kg	NIH HSDB	min
LD50	500	mg/kg	NIH HSDB	max
LOAEL	309.7	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	9	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.43	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	259.9	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	13.9	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	43	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.36	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	43	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00153109	mol/kg	TEST QSAR	
Ames mutagenicity test	0.002	no units	TEST QSAR	
Developmental toxin test	0.873	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Cyfluthrin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			**Prevalence**					**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			**Prevalence**					**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,124	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	291,268	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	841

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			**Prevalence**					**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			**Prevalence**					**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,359	5	Sites	0.09	0.002	0.015	0.0724	0.098	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	190	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,330	246	Sites	18	0.000261	0.0098	0.0655	4.62	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	7	Sites	18	0.000263	0.000548	0.000831	0.000964	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	16	Sites	76	0.00029	0.0037	0.013	0.026	µg/L	
Waste Water Effluent			**Prevalence**					**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Limit of solubility surrogate for occurrence concentration, Surface Water Peak	2019	OPP	2	µg/L		The critical effect of reduced motor activity was based on an acute population adjusted dose and is considered a less-than-chronic response. The modeled surface water acute concentration exceeded cyfluthrin's limit of solubility, so the solubility limit identified in the most recent OPP exposure assessment was selected as the occurrence concentration for cyfluthrin.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000233	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35162	days	
Boiling point	OPERA QSAR	424.372	degree C	
Boiling point	TEST QSAR	442.743	degree C	
Vapor pressure	OPERA QSAR	1.52E-10	mmHg	
Vapor pressure	TEST QSAR	6.1E-10	mmHg	
Solubility in water	OPERA QSAR	2.9271146	µg/L	
Solubility in water	TEST QSAR	23.321373	µg/L	
Bioconcentration factor	OPERA QSAR	414.328	no units	
Bioconcentration factor	TEST QSAR	928.966	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	99888.1	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.95213	no units	
Henry's Law constant	OPERA QSAR	4.45E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Cyfluthrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
126	OPP. 2019. Cyfluthrins. Revised Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Cyhalothrin
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Cyhalothrin
CASRN:	68085-85-8
DTXSID:	DTXSID6023997
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.29

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	17	reduced motor activity	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
5	Limit of Solubility	EDWC SW	OPP	2017

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Cyhalothrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0028	mg/kg/day	OPP 2020	Moser et al. 2016	reduced motor activity	general population	0.0338	17	[348]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL; Acute PAD used- "A chronic dietary risk assessment is not being conducted because there is no apparent increase in hazard from repeated/chronic exposures to the cyhalothrin isomeric mixtures."
Cancer Classification (CC)	NL		OPP 2020						[348]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0062	mg/l	EPA HHBP	
Acute Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	
Acute Population-Adjusted Dose (PAD)	0.00093	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.006	mg/l	Health-based screening levels from USGS	
Intermediate Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	20	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	75	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000820352	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.114	no units	TEST QSAR	
Developmental toxin test	0.956	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Cyhalothrin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	292	2	Sites	0.68	0.009	0.0253	0.0437	0.0483	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	14	Sites	67	0.00022	0.0029	0.016	0.078	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Limit of solubility as a surrogate for occurrence concentration, Surface Water, Peak	2017	OPP	5	ug/L		Cyhalothrin is very insoluble in water and residues in drinking water are expected to be very low. Therefore, the limit of solubility of cyhalothrin (5 ppb) reported in the EPA OPP health assessment was used as the occurrence concentration for cyhalothrin.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54485	days	
Boiling point	OPERA QSAR	422.641	degree C	
Boiling point	TEST QSAR	431.019	degree C	
Vapor pressure	OPERA QSAR	7.5E-09	mmHg	
Vapor pressure	TEST QSAR	3.1E-09	mmHg	
Solubility in water	OPERA QSAR	0.98967	µg/L	
Solubility in water	TEST QSAR	31.93935	µg/L	
Bioconcentration factor	OPERA QSAR	133.562	no units	
Bioconcentration factor	TEST QSAR	342.768	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	181452	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.7988	no units	
Henry's Law constant	OPERA QSAR	1.12E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Cyhalothrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
348	USEPA. 2020. Lambda- & Gamma-Cyhalothrin: Updated Human Health Draft Risk Assessment in Support of Registration Review. DP No. D457005. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Cypermethrin

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Cypermethrin
CASRN:	52315-07-8
DTXSID:	DTXSID1023998
Use:	Insecticide; veterinary medication
Chemical Notes:	This CIS also contains some data for the following: Alpha-cypermethrin; D-trans-beta-cypermethrin; zeta-cypermethrin; cypermethrin, wf.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X; applies to alpha-cypermethrin, d-trans-beta cypermethrin, and zeta-cypermethrin
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.000025

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	2	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	477	reduced motor activity	children	OPP 2020; OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0118	90th Percentile or Maximum	All Ambient Water	NAWQA	1991 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Cypermethrin
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0716	mg/kg/day	OPP 2020; OPP 2023	Wolansky et al. 2006	reduced motor activity	children	0.15	477	[333]; [381]	Note: The acute PAD is expected to be protective of repeated dose exposure scenarios; The HRL is based on the EPA's acute Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). A new OPP assessment exists but does not contribute new data for the HRL. These data are applicable to both cypermethrin and zeta-cypermethrin.
Cancer Classification (CC)	C		OPP 2020; OPP 2023						[333]; [381]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.477	mg/l	EPA HHBP	Cypermethrin and zeta-cypermethrin
Acute Minimal Risk Level (MRL)	0.02	mg/kg/day	CDC ATSDR	
Acute Population-Adjusted Dose (PAD)	0.0716	mg/kg/day	EPA HHBP	Cypermethrin and zeta-cypermethrin
Health-Based Screening Level	0.15	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	14.9	mg/kg	NIH HSDB	min
LD50	7180	mg/kg	NIH HSDB	max
LOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	229	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	11	percent	EPA Chemistry Dashboard	Value is for alpha-cypermethrin
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	Value is for cypermethrin
Subchronic LOAEL	28.2	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	65.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	13.8	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	65.2	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00172982	mol/kg	TEST QSAR	
Ames mutagenicity test	0.163	no units	TEST QSAR	
Developmental toxin test	0.877	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Cypermethrin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	15	106,170	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,347	229	Sites	17	0.000516	0.0116	0.0839	2.3699	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Southeast Stream Quality Assessment (SESQA) (Ambient) [399]	2014	1	0	Sites	0						Cypermethrin, wf
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	71	1	Samples	1				0.014	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000269	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35135	days	
Boiling point	OPERA QSAR	424.345	degree C	
Boiling point	TEST QSAR	445.159	degree C	
Vapor pressure	OPERA QSAR	3.07E-09	mmHg	
Vapor pressure	TEST QSAR	1.12E-09	mmHg	
Solubility in water	OPERA QSAR	14.90354	µg/L	
Solubility in water	TEST QSAR	26.10201	µg/L	
Bioconcentration factor	OPERA QSAR	338.97	no units	
Bioconcentration factor	TEST QSAR	741.31	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	99845.4	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.59788	no units	
Henry's Law constant	OPERA QSAR	2.07E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Cypermethrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
333	USEPA. 2020. Cypermethrin, Zeta-cypermethrin, and Alpha-cypermethrin.Revised Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
381	USEPA. 2023. Cypermethrin, Human Health Risk Assessment for Proposed Tolerances on Tea and Commodities of the Codex Crop Subgroups: Spices, Fruit or Berry and Spices, Root or Rhizome. The Tolerances are Proposed Without a U.S. Registration. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
399	USGS. n.d. Southeast Stream Quality Assessment (SESQA). https://pubs.usgs.gov/publication/fs20143023
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Cyproconazole
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Cyproconazole
CASRN:	94361-06-5
DTXSID:	DTXSID0032601
Use:	Agricultural fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.35

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	P450 induction in females and histopathology, laminar eosinophilic intrahepatocytic bodies in males.	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
21.1		EDWC GW	OPP	2019

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Cyproconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2019	MRID: 41212901 (1988)	P450 induction in females and histopathology, laminar eosinophilic intrahepatocytic bodies in males.	general population	0.0338	60	[307]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2019						[307]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.6	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.02	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute LOAEL	127.59	mg/kg/day	EPA Toxicity Reference Database	max
Acute LOAEL	25.32	mg/kg/day	EPA Toxicity Reference Database	min
Acute NOAEL	127.59	mg/kg/day	EPA Toxicity Reference Database	max
Acute NOAEL	8.14	mg/kg/day	EPA Toxicity Reference Database	min
LD50	2054	mg/kg	NIH HSDB	max
LD50	352	mg/kg	NIH HSDB	min
LOAEL	3.2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	60	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	14	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	139.4	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	139.4	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00460257	mol/kg	TEST QSAR	
Ames mutagenicity test	0.664	no units	TEST QSAR	
Developmental toxin test	0.584	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Cyproconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	38	212,642	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	3	Sites	23	0.0027	0.0027	0.0027	0.0075	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	357	2	Sites	0.56	0.0036	0.0072	0.0155	0.0176	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater (chronic)	2019	OPP	21.1	ug/L	Pesticide in Water Calculator (PWC), version 1.52	The modeled groundwater chronic concentration provided by the most recent OPP risk assessment was selected as the occurrence concentration for cyproconazole. This value conincides with the critical effects identified in the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000283	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.44831	days	
Boiling point	OPERA QSAR	321.422	degree C	
Boiling point	TEST QSAR	365.398	degree C	
Vapor pressure	OPERA QSAR	0.000000261	mmHg	
Vapor pressure	TEST QSAR	5.25E-08	mmHg	
Solubility in water	OPERA QSAR	125211.2596	µg/L	
Solubility in water	TEST QSAR	84538.58652	µg/L	
Bioconcentration factor	OPERA QSAR	43.1516	no units	
Bioconcentration factor	TEST QSAR	118.85	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	182.12	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.90198	no units	
Henry's Law constant	OPERA QSAR	5.48E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Cyproconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
307	USEPA. 2019. Cyproconazole: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D440848

DEET

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	DEET
CASRN:	134-62-3
DTXSID:	DTXSID2021995
Use:	Broad-spectrum insect repellant
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000055

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	4000	reduced body weight in F1 and F2 male and female pups on lactation day 21	lactating women	ATSDR 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.22	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

DEET

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	1	mg/kg/day	ATSDR 2017	EPA, 1989	reduced body weight in F1 and F2 male and female pups on lactation day 21	lactating women	0.0469	4000	[27]	Note: The chronic-duration oral database did not support derivation of a chronic-duration oral MRL for DEET. However, the intermediate-duration oral MRL for DEET is likely to be protective for chronic-duration exposure.
			OPP 2014						[250]	NOTE: There are no toxicity values provided in the OPP assessment. The document states "no dietary or occupational exposures are anticipated, residential and aggregate were not risks of concern due to the lack of hazard."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.2	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.2	mg/l	MN DOH	
Intermediate Minimal Risk Level (MRL)	1	mg/kg/day	CDC ATSDR	
Subchronic Health-Based Guidance Value	0.2	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1584	mg/kg	NIH HSDB	min
LD50	1950	mg/kg	NIH HSDB	max
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	4000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	4000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	61	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00914113	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.042	no units	TEST QSAR	
Developmental toxin test	0.57	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

DEET
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	536	135	Sites	25	0.01	0.05	0.22	2.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	13	Sites	26	0.01	0.02	0.104	0.47	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	5	Sites	71	0.01	0.04	0.275	0.37	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	8	Samples	100	5e-07 ± 1e-07	1.19e-05		2.4e-05 ± 8.2e-06	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.1	0.1	0.1	0.1	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,169	1749	Sites	55	0.01	0.07	0.33	37.6	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	71	1	Sites	1	0.0118	0.0118	0.0118	0.0118	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	4		0.098		0.098	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	22	Sites	58	0.0035	0.0311	0.0899	0.119	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	8	Samples	100	2.33e-05 ± 3e-06	0.0001224		0.0002557 ± 6.25e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	23	Samples	34				0.08	µg/L	
Maruya et al. 2016 (Ambient) [104]	2013	9	7	Sites	78	0.0335	0.11	0.149	0.185	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	6	5	Sites	100	0.541	1.23	12.5	109	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	1	Sites	5				0.006	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	17	Sites	81	0.085	0.195	0.449	1	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000152	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35859	days	
Boiling point	OPERA QSAR	289.966	degree C	
Boiling point	TEST QSAR	307.376	degree C	
Vapor pressure	OPERA QSAR	0.0019986	mmHg	
Vapor pressure	TEST QSAR	0.00031989	mmHg	
Solubility in water	OPERA QSAR	912914.4599	µg/L	
Solubility in water	TEST QSAR	4014726.496	µg/L	
Bioconcentration factor	OPERA QSAR	2.4133	no units	
Bioconcentration factor	TEST QSAR	10.3276	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	191.917	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.18358	no units	
Henry's Law constant	OPERA QSAR	0.000000145	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

DEET

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
27	ATSDR. 2017. Toxicological Profile for DEET (N,N-Diethyl-Meta-Toluamide). U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
250	USEPA. 2014. DEET (N,N-diethyl-meta-toluamide). Revised Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2012-0162-0003. DP No. D413872. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Deltamethrin

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Deltamethrin
CASRN:	52918-63-5
DTXSID:	DTXSID8020381
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.002

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	Based on decreased motor activity.	children	OPP 2023; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.2	Limit of Solubility	EDWC SW	OPP	2023

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Deltamethrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.015	mg/kg/day	OPP 2023; OPP 2019	Wolansky et al. 2006; MRID: 47885701	Based on decreased motor activity.	children	0.15	100	[382]; [308]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2023) exists but does not contribute new data for HRL. acute Pad used; the acute aggregate risk estimates are protective of potential chronic exposure. Infant EF of 0.15 used (consistent with HHBPs).
Cancer Classification (CC)	NL		OPP 2023; OPP 2019						[382]; [308]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.015	mg/kg/day	EPA HHBP	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2	mg/kg	NIH HSDB	min
LD50	300	mg/kg	NIH HSDB	max
LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	7	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	10	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.3	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	20	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	10	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000869	mol/kg	TEST QSAR	
Ames mutagenicity test	0.031	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Deltamethrin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	26	99,549	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	8	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	347	0	Sites							
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,172	133	Sites	11	0.000326	0.012	0.0805	5500	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Limit of solubility as a surrogate for occurrence concentration in Surface Water, Peak	2023	OPP	0.2	ug/L		The deltamethrin limit of solubility is 0.20 ppb, as reported in the most recent EPA OPP risk assessment. This value was selected as the occurrence concentration for deltamethrin.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000239	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35386	days	
Boiling point	OPERA QSAR	430.074	degree C	
Boiling point	TEST QSAR	466.968	degree C	
Vapor pressure	OPERA QSAR	1.49E-08	mmHg	
Vapor pressure	TEST QSAR	1.64E-09	mmHg	
Solubility in water	OPERA QSAR	0.93968316	µg/L	
Solubility in water	TEST QSAR	17.9853336	µg/L	
Bioconcentration factor	OPERA QSAR	323.804	no units	
Bioconcentration factor	TEST QSAR	192.752	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	62323.3	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.20043	no units	
Henry's Law constant	OPERA QSAR	1.87E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Deltamethrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
308	USEPA. 2019. Deltamethrin: Revised Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
382	USEPA. 2023. Deltamethrin Amended Human Health Risk Assessment for the Proposed Tolerances on Vegetable, Legume, Pulse, Bean, Dried Shelled, Except Soybean, Subgroup 6-22E and Vegetable, Legume, Pulse, Pea, Dried Shelled, Subgroup 6-22F, Without U.S. Registration.. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D467156.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Desethyl atrazine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Desethyl atrazine
CASRN:	6190-65-4
DTXSID:	DTXSID5037494
Use:	Pesticide degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00035

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	430	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.15	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Desethyl atrazine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.076	mg/kg/day	OPP 2018	Cooper et al. 2010	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	0.0354	430	[289]	Note: RfD is a 4-day PAD and no cPAD was derived because "Currently available toxicity data indicate that a 4-day exposure is sufficient to elicit a decrease of the LH surge in rats, Therefore, for the purposes of the residential risk assessments, only the 4-day duration is relevant; the 4-day assessment will be protective for longer durations of exposure."
Cancer Classification (CC)	NL		OPP 2018						[289]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	
Maximum Allowable Daily Level	100	µg/day	CalEPA OEHHA Chemical Database	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	35.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	38.1	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	3.2	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	38.1	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00724436	mol/kg	TEST QSAR	
Ames mutagenicity test	0.194	no units	TEST QSAR	
Developmental toxin test	0.582	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Desethyl atrazine

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,708	4106	Sites	38	0.00028	0.022	0.15	6.08	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	20	Sites	35	0.002	0.013	0.082	0.126	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	3	Sites	13	0.006	0.02	0.0993	0.161	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	9	Sites	53	0.00072	0.0413	0.157	0.928	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.006	0.008	0.0216	0.032	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	14,956	5782	Sites	39	0.00097	0.041	0.31	26	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	149	Sites	68	0.000716	0.0208	0.156	1.55	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.00072	0.041	0.219	1.3	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	195	15	Sites	8	0.003	0.02	0.0362	0.071	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	26	Sites	68	0.0047	0.0179	0.14	0.851	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	115	Sites	17	0.002	0.0276	0.157	0.802	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.008	0.024	0.0664	0.114	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	134	21	Samples	16				0.013	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000524	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.36284	days	
Boiling point	OPERA QSAR	330.886	degree C	
Boiling point	TEST QSAR	323.062	degree C	
Vapor pressure	OPERA QSAR	6.17E-09	mmHg	
Vapor pressure	TEST QSAR	0.000000337	mmHg	
Solubility in water	OPERA QSAR	1072297.945	µg/L	
Solubility in water	TEST QSAR	1893655.775	µg/L	
Bioconcentration factor	OPERA QSAR	10.3367	no units	
Bioconcentration factor	TEST QSAR	3.41979	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	98.6632	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.51122	no units	
Henry's Law constant	OPERA QSAR	1.87E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Desethyl atrazine

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
289	USEPA. 2018. Atrazine. Draft Human Health Risk Assessment for Registration Review. EPQ-HQ-OPP-2013-0266-1159. DP No. D418316. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Desisopropylatrazine
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Desisopropylatrazine
CASRN:	1007-28-9
DTXSID:	DTXSID0037495
Use:	Atrazine degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00044

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	430	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.191	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Desisopropylatrazine
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.076	mg/kg/day	OPP 2018	Cooper et al. 2010	attenuation of LH surge in females ages 13-49 (estrous cycle disruption)	females of reproductive age	0.0354	430	[289]	Note: RfD is a 4-day PAD and no cPAD was derived because "Currently available toxicity data indicate that a 4-day exposure is sufficient to elicit a decrease of the LH surge in rats, Therefore, for the purposes of the residential risk assessments, only the 4-day duration is relevant; the 4-day assessment will be protective for longer durations of exposure."
Cancer Classification (CC)	NL		OPP 2018						[289]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.003	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.001	mg/l	MN DOH	Chronic value based on cyanazine
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	Chronic value based on atrazine
Maximum Allowable Daily Level	100	µg/day	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.003	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	18	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	33.4	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	3.8	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	33.4	mg/kg/day	EPA Toxicity Reference Database	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00711214	mol/kg	TEST QSAR	
Ames mutagenicity test	0.08	no units	TEST QSAR	
Developmental toxin test	0.372	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Desisopropylatrazine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,533	769	Sites	17	0.001	0.0418	0.191	4.44	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	2	0.01	0.025	0.062	0.08	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	2	Sites	33	0.03	0.05	0.08	0.08	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	9	Sites	53	0.0027	0.0163	0.063	0.469	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,681	1385	Sites	18	0.0012	0.08	0.38	12.6	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	61	Sites	28	0.005162	0.083	0.105	1.03	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.0027	0.0163	0.199	0.776	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	77	3	Sites	4	0.08	0.086	0.0942	0.097	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	61	Sites	9	0.0032	0.0224	0.212	0.489	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000479	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.34731	days	
Boiling point	OPERA QSAR	328.608	degree C	
Boiling point	TEST QSAR	291.377	degree C	
Vapor pressure	OPERA QSAR	4.93E-09	mmHg	
Vapor pressure	TEST QSAR	0.000000149	mmHg	
Solubility in water	OPERA QSAR	670061.28	µg/L	
Solubility in water	TEST QSAR	2796088.4	µg/L	
Bioconcentration factor	OPERA QSAR	10.2016	no units	
Bioconcentration factor	TEST QSAR	2.23357	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	51.684	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.15045	no units	
Henry's Law constant	OPERA QSAR	9.93E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Desisopropylatrazine
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
289	USEPA. 2018. Atrazine. Draft Human Health Risk Assessment for Registration Review. EPQ-HQ-OPP-2013-0266-1159. DP No. D418316. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Diazinon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Diazinon
CASRN:	333-41-5
DTXSID:	DTXSID9020407
Use:	Pesticide; veterinary medication
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.19

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.49	inhibition of red blood cell acetylcholinesterase in female pups	all infants	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.094	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Diazinon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00035	mg/kg/day	OPP 2016	Parker 2003	inhibition of red blood cell acetylcholinesterase in female pups	all infants	0.143	0.49	[268]	
Cancer Classification (CC)	NL		OPP 2016						[268]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.02	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.006	mg/kg/day	CDC ATSDR	
Intermediate Inhalation Minimal Risk Level (MRL)	0.01	mg/m^3	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.002	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.001	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	2A	no units	WHO IARC	2A = Probably carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1340	mg/kg	NIH HSDB	max
LD50	2.8	mg/kg	NIH HSDB	min
LOAEL	0.02	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.0037	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	11	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	212	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.03	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	212	mg/kg/day	EPA Toxicity Reference Database	max
TD50	53.4	mg/kg/day	NIH CPDB	max
TD50	20.4	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000586138	mol/kg	TEST QSAR	
Ames mutagenicity test	0.26	no units	TEST QSAR	
Developmental toxin test	0.609	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Diazinon
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	295	0	Sites	0	ND	ND	ND		µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,579	959	Sites	9	7e-05	0.0118	0.094	19	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	9	91,491	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	8	184

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	173	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	3	Sites	18	0.00999	0.0345	0.111	0.133	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,871	1	Sites	0.05	0.007	0.007	0.007	0.007	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	15,681	1161	Sites	7	1e-04	0.0166	0.14	490	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	2	Sites	0.91	0.05	0.0655	0.0779	0.081	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8	0.0164	0.0582	0.0916	0.1	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	2,362	703	Sites	30	0.000137	0.043	0.45	331	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	8	0.0212	0.0342	0.228	0.276	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	1e-04	1e-04	1e-04	1e-04	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	18	Samples	14				0.115	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	1	Sites	5						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000332	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.75886	days	
Boiling point	OPERA QSAR	343.403	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000899	mmHg	
Vapor pressure	TEST QSAR	0.0000769	mmHg	
Solubility in water	OPERA QSAR	47279.219	µg/L	
Solubility in water	TEST QSAR	22521.16	µg/L	
Bioconcentration factor	OPERA QSAR	70.7854	no units	
Bioconcentration factor	TEST QSAR	94.189	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	561.251	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.80885	no units	
Henry's Law constant	OPERA QSAR	0.000000113	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Diazinon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
268	USEPA. 2016. Diazinon Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2008-0351-0093. DP No. D419216. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dibutyl 1,2-benzenedicarboxylate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dibutyl 1,2-benzenedicarboxylate
CASRN:	84-74-2
DTXSID:	DTXSID2021781
Use:	Plasticizer in nitrocellulose lacquers, elastomers, explosives, nail polish and solid rocket propellants; in perfumes; in textiles; in safety glass; insecticides; in printing inks; resin solvent; paper coatings; and adhesives.
Chemical Notes:	Canceled pesticide. Last end of use date: 12/31/1987.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00063

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	reproductive and developmental effects	10	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3000	Increased incidence of retained areolas and nipple in the male offspring of rats	females of reproductive age	ATSDR 2001

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.9	90th Percentile	All Ambient Water	NAWQA	1991 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dibutyl 1,2-benzenedicarboxylate
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	IRIS 1987	Smith 1953	increased mortality	general population	0.0338	600	[151]	Note: 1 year feeding study rats "the limitations of this study, such as few animals of one sex, the lack of animal survival data, animal infections, and 50% survival rate among the high dose group, combined with the lack of micropathologic examination, must be noted in interpreting these results"
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	OW 1991	Smith 1953	absense of increased mortality and hemotalogical effects	general population	0.0338	600	[177]	Note: 1 year feeding study rats "the limitations of this study, such as few animals of one sex, the lack of animal survival data, animal infections, and 50% survival rate among the high dose group, combined with the lack of micropathologic examination, must be noted in interpreting these results"
Reference Dose (RfD) or Equivalent	0.5	mg/kg/day	ATSDR 2001	Mylchreest et al. 2000	Increased incidence of retained areolas and nipple in the male offspring of rats	females of reproductive age	0.0354	3000	[9]	Note: only gestational exposure, so appropriate target population is females of reproductive age. Note that no chronic assessment, only acute from developmental study "Groups of 20 pregnant Sprague-Dawley rats (except 11 in the 500 mg/kg/day group) were treated with 0, 0.5, 5, 50, 100, or 500 mg/kg/day di-n-butyl phthalate by gavage in corn oil on gestation days 12–21"
Cancer Classification (CC)	D		IRIS 1990						[168]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	D		OW 1991						[177]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Neurological	0.01	Hoshi, 2009	Developmental; Reproductive	2000	Dobrzynska, 2011; Dobrzynska, 2017	9/1/2000	12/17/2019	1867	80	64	50

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.5	mg/kg/day	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	0.02	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.02	mg/l	EPA Human Health Criteria for CWA	
Subchronic Health-Based Guidance Value	0.02	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	max
LD50	4840	mg/kg	NIH HSDB	min
LOAEL	630	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	630	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	11	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0436516	mol/kg	TEST QSAR	
Ames mutagenicity test	0.09	no units	TEST QSAR	
Developmental toxin test	0.71	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Dibutyl 1,2-benzenedicarboxylate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	22	4	Sites	18	0.3	1.5	1.92	2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	18	186,577

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	26	1	Sites	4	0.002	0.034	0.129	0.137	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	483	2	Sites	0.41	0.637	1.3	14.2	26.4	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	247	7	Sites	3	0.006	0.178	6.76	8.1	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	1	1	Sites	100	1.1	1.1	1.1	1.1	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	638	8	Sites	1	0.477	1.5	3.42	6	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,858	150	Sites	8	0.04	0.37	1.91	150	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	12	Sites	57	0.2	0.4	2.04	4.1	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000251	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.32093	days	
Boiling point	OPERA QSAR	339.891	degree C	
Boiling point	TEST QSAR	348.35	degree C	
Vapor pressure	OPERA QSAR	0.0000202	mmHg	
Vapor pressure	TEST QSAR	0.0000263	mmHg	
Solubility in water	OPERA QSAR	11161375.48	µg/L	
Solubility in water	TEST QSAR	11328.7636	µg/L	
Bioconcentration factor	OPERA QSAR	165.531	no units	
Bioconcentration factor	TEST QSAR	11.17	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1381.63	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.60902	no units	
Henry's Law constant	OPERA QSAR	0.0000018	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dibutyl 1,2-benzenedicarboxylate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
9	ATSDR. 2001. Toxicological Profile for Di-n-Butyl Phthalate. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
151	USEPA. 1987. Chemical Assessment Summary di-n-butyl phthalate. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
168	USEPA. 1990. Chemical Assessment Summary di-n-butyl phthalate. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
177	USEPA. 1991. Drinking Water Criteria Document for Phthalic Acid Esthers (PAES). U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.

Dicamba

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dicamba
CASRN:	1918-00-9
DTXSID:	DTXSID4024018
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.026

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	4	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	decreased pup weight	all infants	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.58	90th Percentile	Finished Water	UCM 2	1993-1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dicamba

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2016	Masters 1993	decreased pup weight	all infants	0.143	60	[269]	
Cancer Classification (CC)	NL		OPP 2016						[269]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.2	mg/l	MN DOH	
Lifetime Health Advisory	4	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.11	mg/l	Canadian Drinking Water Guidelines	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3000	mg/kg	NIH HSDB	max
LD50	757	mg/kg	NIH HSDB	min
LOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	52	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00464515	mol/kg	TEST QSAR	
Ames mutagenicity test	0.143	no units	TEST QSAR	
Developmental toxin test	0.447	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dicamba

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	14,034	48	Sites	0.34	0.02	0.2	1.58	4.06	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,583	143	Sites	2	0.01	0.32	1.76	21	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	32,866,276	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	10	127,276

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	185	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	819	3	Sites	0.37	0.1	0.7	0.7	0.7	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	782	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	12	2	Sites	17	0.025	0.068	0.0888	0.675	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,936	5	Sites	0.26	0.21	2.7	2.92	3	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	77	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	2	1	Sites	50	0.44	0.44	0.44	0.44	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	968	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	117	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,662	219	Sites	3	0.01	0.07	0.923	17	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	3	Sites	1	0.0165	0.0165	0.0925	0.111555	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	3	Sites	25	0.025	0.091	0.111	0.675	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	139	57	Sites	41	0.05	0.124	0.581	14	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.1453	0.145	0.145	0.1453	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.474	0.474	0.474	0.474	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	1	Samples	0.8				0.58	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000544	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.52026	days	
Boiling point	OPERA QSAR	301.331	degree C	
Boiling point	TEST QSAR	314.148	degree C	
Vapor pressure	OPERA QSAR	0.0000333	mmHg	
Vapor pressure	TEST QSAR	0.0000306	mmHg	
Solubility in water	OPERA QSAR	15131094.92	µg/L	
Solubility in water	TEST QSAR	1604912.092	µg/L	
Bioconcentration factor	OPERA QSAR	3.37742	no units	
Bioconcentration factor	TEST QSAR	4.12098	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	31.7015	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.21198	no units	
Henry's Law constant	OPERA QSAR	2.49E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dicamba

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
269	USEPA. 2016. Dicamba and Dicamba BAPMA Salt: Human-Health Risk Assessment for Proposed Section 3 New Uses on Dicamba-tolerant Cotton and Soybean. EPA-HQ-OPP-2012-0841-0052. DP Nos. D378366 D404917 D402514 D421306. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dichlobenil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dichlobenil
CASRN:	1194-65-6
DTXSID:	DTXSID5032365
Use:	Pesticide; industrial preservative
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0034

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	5	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	Increased liver weights and increased serum cholesterol, triglycerides, phospholipids and alkaline phosphatase in both sexes; increased gamma-GT and periportal hypertrophy of hypatocytes in males.	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.202	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dichlobenil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2017	MRID: 43969701 (1995)	Increased liver weights and increased serum cholesterol, triglycerides, phospholipids and alkaline phosphatase in both sexes; increased gamma-GT and periportal hypertrophy of hypatocytes in males.	general population	0.0338	60	[280]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	C		OPP 2017						[280]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	13	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.45	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.06	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3160	mg/kg	NIH HSDB	max
LD50	501	mg/kg	NIH HSDB	min
LOAEL	277	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	8.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1.25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1350	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	18.75	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	3.75	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00922571	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.011	no units	TEST QSAR	
Developmental toxin test	0.28	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dichlobenil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,137	20	Sites	0.48	0.01	0.04	0.202	1.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	6	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.011156	0.0112	0.0112	0.075	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,548	20	Sites	1	0.003	0.045	0.508	16.8	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	2	Sites	25	0.0112	0.0112	0.0209	0.075	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000262	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.33387	days	
Boiling point	OPERA QSAR	269.865	degree C	
Boiling point	TEST QSAR	255.39	degree C	
Vapor pressure	OPERA QSAR	0.000669028	mmHg	
Vapor pressure	TEST QSAR	0.0114551	mmHg	
Solubility in water	OPERA QSAR	19580.07031	µg/L	
Solubility in water	TEST QSAR	308002.8261	µg/L	
Bioconcentration factor	OPERA QSAR	32.2862	no units	
Bioconcentration factor	TEST QSAR	27.9898	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	316.329	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.74149	no units	
Henry's Law constant	OPERA QSAR	0.0000117	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dichlobenil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
280	USEPA. 2017. Dichlobenil - Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D432708
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dichlorvos (DDVP)
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dichlorvos (DDVP)
CASRN:	62-73-7
DTXSID:	DTXSID5020449
Use:	Insecticide; veterinary medicine
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.39

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	6	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.3	red blood cell acetylchloinesterase depression in female adult rats	females of reproductive age	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.116	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dichlorvos (DDVP)
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00006	mg/kg/day	OPP 2020	MRID 46153304	red blood cell acetylchloinesterase depression in female adult rats	females of reproductive age	0.0354	0.3	[334]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	S		OPP 2020						[334]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0055	mg/l	EPA HHBP	
Acute Minimal Risk Level (MRL)	0.004	mg/kg/day	CDC ATSDR	
Acute Population-Adjusted Dose (PAD)	0.00083	mg/kg/day	EPA HHBP	
Acute inhalation Minimal Risk Level (MRL)	0.002	ppm	CDC ATSDR	
Cancer Slope Factor (CSF)	0.29	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic inhalation Minimal Risk Level (MRL)	0.00006	ppm	CDC ATSDR	
Health-Based Screening Level	0.003	mg/l	Health-based screening levels from USGS	
Inhalation Unit Risk (IUR)	0.000083	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Inhalation Minimal Risk Level (MRL)	0.0003	ppm	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.003	mg/kg/day	CDC ATSDR	
Reference Concentration (RfC)	0.0005	mg/m^3	EPA IRIS	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP (1976)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP (1987)	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats EE	no units	HHS NTP (1987)	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP (1976)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP (1976)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice SE	no units	HHS NTP (1987)	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP (1976)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP (1987)	SE = Some evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Inhalation LOAEL	0.002766	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation LOAEL	0.0275	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
Inhalation NOAEL	0.0002765	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation NOAEL	0.0275	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
LD50	140	mg/kg	NIH HSDB	max
LD50	6.51	mg/kg	NIH HSDB	min
LOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	40	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.05	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	40	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	7	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
TD50	3.21	mg/kg/day	NIH CPDB	min
TD50	7850	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000565	mol/kg	TEST QSAR	
Ames mutagenicity test	0.617	no units	TEST QSAR	
Developmental toxin test	0.71	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Dichlorvos (DDVP)
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence						Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,805	52	Sites	1	0.0012	0.02	0.116	0.402	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	11,976

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	22	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.027	0.027	0.027	0.027	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence						Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	30	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	8,350	111	Sites	1	0.0026	0.04	0.302	3.08	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	1	Sites	12	0.027	0.0432	0.0562	0.0595	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,203	55	Sites	5	0.0059	0.0378	0.2	0.634	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence						Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000323	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.1387	days	
Boiling point	OPERA QSAR	234.005	degree C	
Boiling point	TEST QSAR	215.618	degree C	
Vapor pressure	OPERA QSAR	0.0157875	mmHg	
Vapor pressure	TEST QSAR	0.047863	mmHg	
Solubility in water	OPERA QSAR	10837539.94	µg/L	
Solubility in water	TEST QSAR	35183064.37	µg/L	
Bioconcentration factor	OPERA QSAR	0.502026	no units	
Bioconcentration factor	TEST QSAR	3.75837	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	46.6523	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.42945	no units	
Henry's Law constant	OPERA QSAR	4.06E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dichlorvos (DDVP)

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
334	USEPA. 2020. Dichlorovos (DDVP): Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dicrotophos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dicrotophos
CASRN:	141-66-2
DTXSID:	DTXSID9023914
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.028

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	5	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.6	Inhibition of brain cholinesterase (ChE) in adult rats	females of reproductive age	OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.017	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dicrotophos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0001	mg/kg/day	OPP 2023	MRIDs: 43980201, 44527802	Inhibition of brain cholinesterase (ChE) in adult rats	females of reproductive age	0.0354	0.6	[391]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment (2023) providing an updated steady-state PAD has been published since that time and has been used to derive an HRL that differs from the HHBP for dicrotophos.
Cancer Classification (CC)	S		OPP 2023						[391]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0005	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.00007	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.0002	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	21	mg/kg	NIH HSDB	max
LD50	9	mg/kg	NIH HSDB	min
LOAEL	0.02	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	9.06	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.02	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	9.06	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00003	mol/kg	TEST QSAR	
Ames mutagenicity test	0.421	no units	TEST QSAR	
Developmental toxin test	0.694	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dicrotophos

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,737	29	Sites	0.61	5e-04	0.00906	0.17	6.83	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	14	1,508,748	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	12	0.0015	0.0015	0.00283	0.09	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,561	23	Sites	0.35	0.00041	0.0087	0.1	3.38	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	135	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	2	Sites	17	0.0015	0.0015	0.0015	0.09	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	3	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000011	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.13853	days	
Boiling point	OPERA QSAR	309.891	degree C	
Boiling point	TEST QSAR	299.282	degree C	
Vapor pressure	OPERA QSAR	0.00015999	mmHg	
Vapor pressure	TEST QSAR	0.000208449	mmHg	
Solubility in water	OPERA QSAR	997617692.4	µg/L	
Solubility in water	TEST QSAR	12855830.12	µg/L	
Bioconcentration factor	OPERA QSAR	0.922621	no units	
Bioconcentration factor	TEST QSAR	1.64437	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	45.6565	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.000299434	no units	
Henry's Law constant	OPERA QSAR	5.04E-11	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dicrotophos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
391	USEPA. 2023. Revised Human Health Risk Assessment for Registration Review of Dicrotophos. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dieldrin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dieldrin
CASRN:	60-57-1
DTXSID:	DTXSID9020453
Use:	Restricted insecticide
Chemical Notes:	Canceled pesticide. Last end of use date: 5/15/1987.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	420

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	carcinogen with linear MOA	1	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.0018	liver carcinoma	general population	OW 2003

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.764	90th Percentile	Finished Water	UCM2	1993-1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on dieldrin in RD 1 (2003). The EPA identified that dieldrin did not appear to occur at levels of public health concern in PWSs, and thus an NPWDR did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- Detections at 0.1% of PWSs from UCM-State Round 2 monitoring
- RD 1 HRL = 0.002 µg/L

USEPA, 2003 [204]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dieldrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00005	mg/kg/day	IRIS 1988	Walker et al., 1969	liver lesions	general population	0.0338	0.3	[159]	
Reference Dose (RfD) or Equivalent	0.00005	mg/kg/day	ATSDR 2022	Walker et al., 1969	increased liver weight, liver parenchymal cell changes, focal hyperplasia	general population	0.0338	0.3	[34]	
Reference Dose (RfD) or Equivalent	0.00005	mg/kg/day	OW 2003	Walker et al., 1969	increased liver weight, liver parenchymal cell changes, focal hyperplasia	general population	0.0338	0.3	[204]	
Cancer Slope Factor (CSF)	16	$(mg/kg/day)^{-1}$	IRIS 1988	Davis and Fitzhugh, 1962; Davis, 1965; Walker et al., 1972; Thorpe and Walker, 1973; NCI, 1978; Tennekes et al., 1981; Meierhenry et al., 1982	liver carcinoma	general population	0.0338	0.0018	[159]	
Cancer Slope Factor (CSF)	16	$(mg/kg/day)^{-1}$	OW 2003	Davis and Fitzhugh, 1962; Davis, 1965; Walker et al., 1972; Thorpe and Walker, 1973; NCI, 1978; Tennekes et al., 1981; Meierhenry et al., 1982	liver carcinoma	general population	0.0338	0.0018	[204]	
Cancer Classification (CC)	B2		IRIS 1988						[159]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data
Cancer Classification (CC)	B2		OW 2003						[204]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.0005	mg/l	EPA DWSHA 2018	
Acute/Short-term Health-Based Guidance Value	0.0002	mg/l	MN DOH	
Cancer Slope Factor (CSF)	16	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.0002	mg/l	MN DOH	Chronic value for developmental, liver system, immune system, and nervous system
Chronic Health-Based Guidance Value	0.0000006	mg/l	MN DOH	Chronic value for cancer
Human Health Ambient Water Quality Criteria	1.2E-09	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.0046	$(µg/m^3)^{-1}$	EPA IRIS	
Inhalation Unit Risk (IUR)	0.0046	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.0001	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.000002	mg/l	EPA DWSHA 2018	
Subchronic Health-Based Guidance Value	0.0002	mg/l	MN DOH	
Cancer Classification (CC)	2A	no units	WHO IARC	2A = Probably carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP (1977; B6C3F1 Mice)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Mice NT	no units	HHS NTP (1977; No Strain of Species)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP (1977; F344 Rats and Osborne-Mendel Rats)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice E	no units	HHS NTP (1977; B6C3F1 Mice)	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NT	no units	HHS NTP (1977; No Strain of Species)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP (1977; F344 Rats and Osborne-Mendel Rats)	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3	mg/kg	NIH HSDB	min
LD50	37000	mg/kg	NIH HSDB	max
LOAEL	0.375	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3.25	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.375	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	31	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
TD50	1.04	mg/kg/day	NIH CPDB	min
TD50	489	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000284	mol/kg	TEST QSAR	
Ames mutagenicity test	0.019	no units	TEST QSAR	
Developmental toxin test	0.55	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Dieldrin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	11,788	11	Sites	0.09	0.02	0.15	0.764	1.36	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,152	327	Sites	4	0.001	0.009	0.053	5.6	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	2	Sites	4	0.003	0.0045	0.0057	0.006	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	162	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	822	2	Sites	0.24	0.037	0.0385	0.0397	0.04	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	825	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	2	Sites	9	0.02	0.0315	0.0337	0.034	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Hawaii Department of Health (Finished) [143]	2014	1		Sites		0.01	0.01	0.01	0.01	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,514	4	Sites	0.26	0.01	0.025	31.2	52	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	1	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	77	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	3	1	Sites	33	0.044	0.044	0.044	0.044	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	999	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,685	447	Sites	4	5e-04	0.009	0.109	7.2	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	24	5	Sites	21	0.003	0.171	0.306	0.38	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	28	Sites	74	6.78e-05	0.000774	0.00245	0.0128	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	2	Sites	2	0.002	0.003	0.0038	0.004	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Minnesota Department of Health (Ambient) [115]	1970 - 2016	NA	32	Samples		0.01			0.9	µg/L	
Village Creek, AL (Ambient) [63]	2015	4		Sites		0.00096	0.0013	0.00142	0.0015	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	17	Sites	81	1e-04	0.00077	0.00572	0.018	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.44E-11	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)	14.4	ng/g	
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	333.114	days	
Boiling point	OPERA QSAR	329.999	degree C	
Boiling point	TEST QSAR	384.804	degree C	
Vapor pressure	OPERA QSAR	0.00000588	mmHg	
Vapor pressure	TEST QSAR	0.00000224	mmHg	
Solubility in water	OPERA QSAR	206.45	µg/L	
Solubility in water	TEST QSAR	990.37	mol/L	
Bioconcentration factor	OPERA QSAR	8099.26	no units	
Bioconcentration factor	TEST QSAR	918.333	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	12041.2	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.11788	no units	
Henry's Law constant	OPERA QSAR	0.00000823	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dieldrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
34	ATSDR. 2022. Toxicological Profile for Aldrin and Dieldrin. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
63	EPA Region 4. Village Creek Dieldrin Screening. June 2015. https://www.birminghamal.gov/wp-content/uploads/2017/08/15-0308-Village-Creek-Dieldrin-Screening-Final-Report-v081015.pdf
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
115	Minnesota Department of Health. Dieldrin and Drinking Water. October 2016. https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/dieldrininfo.pdf
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
143	State of Hawaii Department of Health. Trace levels of dieldrin and bromacil in two Oahu Water Systems. January 2015. https://health.hawaii.gov/news/files/2013/05/TRACE-LEVELS-OF-DIELDRIN-AND-BROMACIL-DETECTED-IN-TWO-OAHU-WATER-SYSTEMS.pdf
145	USEPA, 2001. Regulatory Determination Support Document for Aldrin and Dieldrin. EPA 815 R-01-011.
159	USEPA. 1988. Chemical Assessment Summary, Dieldrin. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
204	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Aldrin and Dieldrin. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.

Diethyl phthalate

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Diethyl phthalate
CASRN:	84-66-2
DTXSID:	DTXSID7021780
Use:	Solvent for nitrocellulose and cellulose acetate, plasticizer, wetting agent; in plastics, perfumery as fixative and solvent, alcohol denaturant, plasticizer in solid rocket propellants.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000061

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	10	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	4400	decreased weight gain and kidney weight	general population	OW 1992

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.27	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Diethyl phthalate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.8	mg/kg/day	IRIS 1987	Brown et al. 1978	decreased growth rate and food consumption and altered organ weights	general population	0.0338	5000	[155]	
Reference Dose (RfD) or Equivalent	0.75	mg/kg/day	OW 1992	Brown et al. 1978	decreased weight gain and kidney weight	general population	0.0338	4400	[184]	
Cancer Classification (CC)	D		OW 1992						[184]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	D		IRIS 1987						[155]	D = Not classifiable as to human carcinogenicity
			ATSDR 1995						[5]	Note: ATSDR concluded that there are insufficient data for derivation of a chronic oral MRL for diethyl phthalate.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Systemic, Reproductive, Hepatic	0.57	Pereira, 2008, Pereira, 2006	Reproductive	1470	Yamasaki, 2005	6/1/1994	4/14/2020	728	10	39	7

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	7	mg/kg/day	CDC ATSDR	
Chronic Health-Based Guidance Value	6	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.6	mg/l	EPA Human Health Criteria for CWA	
Intermediate Minimal Risk Level (MRL)	6	mg/kg/day	CDC ATSDR	
Cancer Classification (CC)	Female.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1000	mg/kg	NIH HSDB	min
LD50	9200	mg/kg	NIH HSDB	max
LOAEL	1375	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	197	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1375	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	40	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0157036	mol/kg	TEST QSAR	
Ames mutagenicity test	0.16	no units	TEST QSAR	
Developmental toxin test	0.748	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Diethyl phthalate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	101	13	Sites	13	0.1	0.15	0.27	0.8	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	17	1	Sites	6	0.007	0.0435	5.5	6.2	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	483	1	Sites	0.21	4.9	4.9	4.9	4.9	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	1	Sites	33	0.1	0.1	0.1	0.1	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.1	0.1	0.1	0.1	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	113	2	Sites	2	0.005	0.046	6.34	13.6	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	638	2	Sites	0.31	0.421	0.76	1.03	1.1	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,983	316	Sites	11	0.04	0.2	0.914	130	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.128	0.135	0.141	0.142	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50	0.1	0.1	0.1	0.1	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	18	Sites	86	0.05	0.21	0.414	2.3	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000227	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.14045	days	
Boiling point	OPERA QSAR	299.636	degree C	
Boiling point	TEST QSAR	312.231	degree C	
Vapor pressure	OPERA QSAR	0.0020989	mmHg	
Vapor pressure	TEST QSAR	0.00091622	mmHg	
Solubility in water	OPERA QSAR	1033238.208	µg/L	
Solubility in water	TEST QSAR	367131.5904	µg/L	
Bioconcentration factor	OPERA QSAR	8.43858	no units	
Bioconcentration factor	TEST QSAR	6.45654	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	69.4075	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.44414	no units	
Henry's Law constant	OPERA QSAR	2.37E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Diethyl phthalate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
5	ATSDR. 1995. Toxicological Profile for Diethyl Phthalate. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
155	USEPA. 1987. Chemical Assessment Summary, Diethyl Phthalate. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
184	USEPA. 1992. Drinking Water Criteria Document for Phthalic Acid Esters (PAEs). U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH.

Difenoconazole

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Difenoconazole
CASRN:	119446-68-3
DTXSID:	DTXSID4032372
Use:	Fungicide, insecticide, seed treatment/protectant.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.091

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	increased incidence of liver lesions (individual cell necrosis and bile stasis in males, hepatocyte hypertrophy in both sexes), and increased serum levels of SDH in males	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
27.4		EDWC SW	OPP	2021

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Difenoconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2021	MRID: 42090015	increased incidence of liver lesions (individual cell necrosis and bile stasis in males, hepatocyte hypertrophy in both sexes), and increased serum levels of SDH in males	general population	0.0338	300	[358]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment (2021) providing an updated chronic PAD has been published since that time and has been used to derive an HRL that differs from the HHBP for difenoconazole.
Cancer Classification (CC)	S		OPP 2021						[358]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1.7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.25	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1453	mg/kg	NIH HSDB	min
LD50	2150	mg/kg	NIH HSDB	max
LOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	818.87	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.96	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	818.87	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	45	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	2250	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2250	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00254683	mol/kg	TEST QSAR	
Ames mutagenicity test	0.467	no units	TEST QSAR	
Developmental toxin test	0.413	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Difenoconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	45	600358	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.0053	0.0053	0.0053	0.006	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	332	7	Sites	2	0.0023	0.0188	0.126	0.249	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	1	Sites	10	0.0053	0.0053	0.0053	0.006	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	2	Sites	3	0.0115	0.0182	0.0497	0.0576	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water (chronic)	2021	OPP	27.4	µg/L	Pesticide in Water Calculator (PWC), v1.52	The modeled 1-in-10 year annual mean estimated drinking water concentration provided by the most recent EPA OPP health assessment was selected as the occurrence value for difenoconazole.This value coincides with the chronic critical health effect of increased incience of liver lesions provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		1.28E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.36235	days	
Boiling point	OPERA QSAR	335.579	degree C	
Boiling point	TEST QSAR	413.931	degree C	
Vapor pressure	OPERA QSAR	2.53E-10	mmHg	
Vapor pressure	TEST QSAR	1.75E-09	mmHg	
Solubility in water	OPERA QSAR	14950.368	µg/L	
Solubility in water	TEST QSAR	5687.64	µg/L	
Bioconcentration factor	OPERA QSAR	230.306	no units	
Bioconcentration factor	TEST QSAR	148.936	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	4020.3	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.29715	no units	
Henry's Law constant	OPERA QSAR	0.00000493	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Difenoconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
358	USEPA. 2021. Difenoconazole. Human Health Risk Assessment for the Establishment of Tolerances with No U.S. Registrations in/on Japanese Persimmon, Olive, and Black Pepper. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dimethenamid

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dimethenamid
CASRN:	87674-68-8
DTXSID:	DTXSID4032376
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00037

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	decreased body weight and body weight gain in both sexes, decreased food conversion ratios in females, and increased microscopic hepatic lesions in both sexes	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.11	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dimethenamid

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2020	MRIDs 41706808 and 42030102	decreased body weight and body weight gain in both sexes, decreased food conversion ratios in females, and increased microscopic hepatic lesions in both sexes	general population	0.0338	300	[335]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	C		OPP 2020						[335]	Note: cRfD is considered protective of the cancer effects. C = Possible human carcinogen.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	10	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	2	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.6	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.3	mg/l	MN DOH	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.6	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	371	mg/kg	NIH HSDB	min
LD50	427	mg/kg	NIH HSDB	max
LOAEL	36	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	431	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	431	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5.1	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	204	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	33.6	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	204	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	4.72	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.443	no units	TEST QSAR	
Developmental toxin test	0.711	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dimethenamid

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,713	176	Sites	6	0.00021	0.00904	0.11	7	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	10	2476959	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.12	0.12	0.12	0.12	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	5	4	Sites	80	0.000999	0.001	0.0055	0.0225	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,066	308	Sites	10	0.00012	0.0134	0.246	7.65	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	172	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	5	4	Sites	80	0.000999	0.001	0.00718	0.213	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	11	0.03	0.03	0.079	0.1	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	6	Sites	1	3e-04	0.0024	0.0152	0.0224	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000545	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.34898	days	
Boiling point	OPERA QSAR	294.311	degree C	
Boiling point	TEST QSAR	337.241	degree C	
Vapor pressure	OPERA QSAR	0.000272089	mmHg	
Vapor pressure	TEST QSAR	0.0000108	mmHg	
Solubility in water	OPERA QSAR	1250999.987	µg/L	
Solubility in water	TEST QSAR	211143.9966	µg/L	
Bioconcentration factor	OPERA QSAR	62.9913	no units	
Bioconcentration factor	TEST QSAR	17.8238	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	236.886	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.14996	no units	
Henry's Law constant	OPERA QSAR	8.11E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dimethenamid

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
335	USEPA. 2020. Dimethenamid/Dimethenamid-p: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 438816.

Dimethoate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dimethoate
CASRN:	60-51-5
DTXSID:	DTXSID7020479
Use:	Pesticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00012

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	310	10% acetylchloinesterase (AChE) inhibition	all infants	OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0387	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X		X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	X	Not Applicable

Basis

The EPA made a negative regulatory determination for dimethoate in RD 3 (2015). The EPA identified that although dimethoate has the potential to cause adverse health effects based, regulation of dimethoate does not represent a meaningful opportunity for health risk reduction for persons served by PWSs due to the relatively small number of people likely exposed to dimethoate through drinking water based on, among other data, the following:
- No detections in UCMR 2 monitoring
- RD 3 HRL: 15.4 µg/L

USEPA, 2015 [262]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dimethoate
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.22	mg/kg/day	OPP 2023	in MRID 51538101	10% acetylchloinesterase (AChE) inhibition	all infants	0.143	310	[383]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment (2023) providing new information has been published since that time and has been used to derive an HRL. The RfD is a steady-state (ss) infant PAD for omethoate in drinking water dervied via PBPK modeling. "Omethoate forms in the process of certain water treatments (e.g., chlorination); therefore, 100% conversion from dimethoate to omethoate is assumed in the dietary risk assessment" and "MOEs for water-only were calculated just for omethoate." "For this dietary risk assessment, the combined MOEs are likely to be conservative to the extent that drinking water provided larger contributions, and the drinking water concentration was an unrefined, conservative, point estimate (EDWC)
Cancer Classification (CC)	C		OPP 2023						[383]	Note: "Quantification of risk using a non-linear approach will adequately account for all chronic toxicity, including potential carcinogenicity, that could result from exposure to dimethoate." C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.087	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.013	mg/kg/day	EPA HHBP	
Drinking Water Guideline Value	0.006	mg/l	WHO Drinking Water Quality Guidelines	
Health-Based Screening Level	0.014	mg/l	Health-based screening levels from USGS	
Maximum Allowable Concentration (MAC)	0.02	mg/l	Canadian Drinking Water Guidelines	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	50	mg/kg	NIH HSDB	min
LD50	600	mg/kg	NIH HSDB	max
LOAEL	0.25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	30	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.05	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
TD50	222	mg/kg/day	NIH CPDB	max
TD50	92.4	mg/kg/day	NIH CPDB	min

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000465586	mol/kg	TEST QSAR	
Ames mutagenicity test	0.366	no units	TEST QSAR	
Developmental toxin test	0.724	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dimethoate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	4,140	0	Sites	0	ND	ND	ND		µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,762	50	Sites	1	0.00042	0.00706	0.0387	0.683	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	29	1148711	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	32

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	184	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	12	0.0075	0.0378	0.062	0.068	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,100	2	Sites	0.1	0.082	0.541	0.908	1	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,768	57	Sites	0.84	0.00034	0.01	0.0617	2.1	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8	0.0088	0.0088	0.0088	0.0315	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,372	219	Sites	16	0.00491	0.218	1.29	16.4	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.133	0.184	0.226	0.236	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.061	0.061	0.061	0.061	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000125	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	ug/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	82.443	days	
Boiling point	OPERA QSAR	308.682	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000187	mmHg	
Vapor pressure	TEST QSAR	0.0000248	mmHg	
Solubility in water	OPERA QSAR	31912975.5	µg/L	
Solubility in water	TEST QSAR	3920220.85	µg/L	
Bioconcentration factor	OPERA QSAR	1.58793	no units	
Bioconcentration factor	TEST QSAR	3.70681	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	15.8484	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.780537	no units	
Henry's Law constant	OPERA QSAR	2.06E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dimethoate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
262	USEPA. 2015. Regulatory Determination 3 Support Document. December 2015. EPA Publication # 815-R-15-014.
383	USEPA. 2023. Dimethoate. Second Revised Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 438816.

Dinotefuran

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dinotefuran
CASRN:	165252-70-0
DTXSID:	DTXSID7034549
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.043

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	6000	Based on decreased body weight gain and nephrotoxicity.	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
257		EDWC, SW	OPP	2019

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dinotefuran

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	1	mg/kg/day	OPP 2019	MRID: 45640001	Based on decreased body weight gain and nephrotoxicity.	general population	0.0338	6000	[309]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2019						[309]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	8.33	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	1.25	mg/kg/day	EPA HHBP	
Health-Based Screening Level	6	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	min
LD50	2804	mg/kg	NIH HSDB	max
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	4728	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	4728	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	11560	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	58	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	34	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	5414	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00626614	mol/kg	TEST QSAR	
Ames mutagenicity test	0.914	no units	TEST QSAR	
Developmental toxin test	0.576	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dinotefuran
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4	2	Sites	50	0.0016	0.0031	0.00374	0.0041	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	18	41507	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	5	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	373	33	Sites	9	0.0019	0.0181	0.216	1.89	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	107	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	5	1	Sites	20	0.0125	0.0125	0.0125	0.0125	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	204	35	Sites	17	0.00132	0.0244	0.171	0.957	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	5	Sites	13	0.0064	0.0125	0.0858	0.1338	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	6	Sites	29	0.00669	0.0852	0.39	1.38677	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water, 10 day	2019	OPP	257	µg/L	Tier 1 Rice Model v.1.0	The modeled surface water chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for dinotefuran.This value coincides with the critical effect of nephrotoxicity provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000267	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.64018	days	
Boiling point	OPERA QSAR	305.275	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000458	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	39581570.57	µg/L	
Solubility in water	TEST QSAR	1329876.548	µg/L	
Bioconcentration factor	OPERA QSAR	1.99391	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	18.4608	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.642555	no units	
Henry's Law constant	OPERA QSAR	1.34E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dinotefuran

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
309	USEPA. 2019. Dinotefuran: Section 18 Request for Use on Kiwifruit, Fuzzy in Alabama. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D451224
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Dithiopyr

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Dithiopyr
CASRN:	97886-45-8
DTXSID:	DTXSID9032379
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	5.5

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	21	Based on changes in clinical chemistry parameters (GOT, GPT, TP, Alb, TChol), and histopathology in the liver (spongiosis hepatis in males and bile ductal proliferation in females) and kidney (chronic nephropathy in males).	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
116		EDWC GW	OPP	2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Dithiopyr

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0036	mg/kg/day	OPP 2020	MRID: 41990601	Based on changes in clinical chemistry parameters (GOT, GPT, TP, Alb, TChol), and histopathology in the liver (spongiosis hepatis in males and bile ductal proliferation in females) and kidney (chronic nephropathy in males).	general population	0.0338	21	[336]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	E		OPP 2020						[336]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3000	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	3.27	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.31	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	21	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	6.62	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	813	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.662	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	813	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.782	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Dithiopyr

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1	1	Sites	100	0.0072	0.0072	0.0072	0.0072	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	1636	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	240	87	Sites	36	0.0014	0.0079	0.0502	3.99	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	28	Sites	36	0.0019	0.0076	0.0507	0.2028	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	19	Sites	90	0.00247	0.0165	0.0893	0.11856	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Groundwater (chronic)	2020	OPP	116	µg/L	Pesticide Root Zone Model - Ground Water (PRZM_GW)	The modeled groundwater chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for dithiopyr. This value coincides with the critical effects of increases in clinical chemistry parameters and histopathology in the liver adn kidney provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000172	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.19478	days	
Boiling point	OPERA QSAR	342.845	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000767	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	1400.9209	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR	145.926	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	681.779	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.74884	no units	
Henry's Law constant	OPERA QSAR	3.48E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Dithiopyr

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
336	USEPA. 2020. Dithiopyr: Revised Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D455874, D456392.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Diuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Diuron
CASRN:	330-54-1
DTXSID:	DTXSID0020446
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.4

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	4	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1.55	Kidney tumors in Wistar rats (M); Urinary Bladder tumors in Wistar rats (M)(F); Mammary Gland tumors in NMRI mice (F)	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.1	90th Percentile	Finished Water	UCMR 1	2001-2003

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Diuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2020	MRID 40886501	Based on decreased erythrocytes, hemoglobin, hematocrit; increased MCV, reticulocytes, urea; increased incidence of blood in urine, increased spleen weights	general population	0.0338	60	[337]	
Cancer Slope Factor (CSF)	0.0191	$(mg/kg/day)^{-1}$	OPP 2020	MRID 421595-01 (Taylor 1997)	Kidney tumors in Wistar rats (M); Urinary Bladder tumors in Wistar rats (M)(F); Mammary Gland tumors in NMRI mice (F)	general population	0.0338	1.55	[337]	
Cancer Classification (CC)	L		OPP 2020						[337]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	1	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.002	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1017	mg/kg	NIH HSDB	min
LD50	3400	mg/kg	NIH HSDB	max
LOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	867	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	867	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	12	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1.6	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	1.8	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.7	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.8	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00470977	mol/kg	TEST QSAR	
Ames mutagenicity test	0.027	no units	TEST QSAR	
Developmental toxin test	0.759	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Diuron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	293	1	Sites	0.34	2.1	2.1	2.1	2.1	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,588	713	Sites	9	0.00021	0.024	0.231	27.7	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	31	2407395	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	5	358

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	39888

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	48	7	Sites	15	0.01	0.02	0.058	0.18	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	26	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.01	0.01	0.024	0.03	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	10	Sites	67	0.0027	0.0072	0.057	1.3	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.0041	0.0041	0.0041	0.0041	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	213	9	Sites	4	1.2	3.5	3.5	3.5	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,845	879	Sites	13	0.00029	0.0279	0.251	37	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	29	Sites	13	0.0027	0.0141	0.0589	0.134	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	8	Sites	80	0.0027	0.012	0.06	1.2	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	818	420	Sites	51	0.0033	0.263	3.39	860	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	20	Sites	53	0.0024	0.0256	0.193	1.362	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	19	Sites	3	5e-04	0.0225	0.0758	0.121	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	21	Samples	17				6.07	µg/L	
Maruya et al. 2016 (Ambient) [104]	2013	9	7	Sites	78	0.014	0.025	0.0575	0.0683	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	19	Sites	90	0.00212	0.051	0.491	1.78734	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000108	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.50986	days	
Boiling point	OPERA QSAR	323.021	degree C	
Boiling point	TEST QSAR	298.055	degree C	
Vapor pressure	OPERA QSAR	6.92E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000828	mmHg	
Solubility in water	OPERA QSAR	40511.74127	µg/L	
Solubility in water	TEST QSAR	63463.4143	µg/L	
Bioconcentration factor	OPERA QSAR	14.1888	no units	
Bioconcentration factor	TEST QSAR	22.9087	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	250.231	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.6782	no units	
Henry's Law constant	OPERA QSAR	1.53E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Diuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
337	USEPA. 2020. Diuron: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D457957
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Endosulfan sulfate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Endosulfan sulfate
CASRN:	1031-07-8
DTXSID:	DTXSID3037541
Use:	Pesticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0019

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	5	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	40	Decreased BW gain in males and females; increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males; neurological findings in males and females	general population	PPRTV 2013

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0774	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Endosulfan sulfate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.006	mg/kg/day	PPRTV 2013	Hoechst Celanese Corporation 1989a and 1989b	Decreased BW gain in males and females; increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males; neurological findings in males and females	general population	0.0338	40	[249]	Note: Based on exposure of the parent compound, endosulfan, with application of a MW conversion for consideration of endosulfan sulfate applied to the IRIS chronic RfD (note the value does not change for endosulfan sulfate after rounding to one significant figure).
Cancer Classification (CC)	I		PPRTV 2013						[249]	Note: paucity of data contributes to the "I" descriptor despite the parent compound being classified as "Not likely to be carcinogenic to humans". I = Inadequate evidence to determine carcinogenic potential.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Human Health Ambient Water Quality Criteria	0.02	mg/l	EPA Human Health Criteria for CWA	
Provisional Subchronic RfD	0.003	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro assays tested	28	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.357	no units	TEST QSAR	
Developmental toxin test	0.974	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Endosulfan sulfate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,593	14	Sites	0.54	0.004	0.012	0.0774	0.184	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	38	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	11	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	277	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,948	34	Sites	0.86	0.00018	0.011	1.08	15	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,005	194	Sites	19	1.2e-06	6.09e-05	0.0155	0.58	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	20	Sites	53	4.77e-05	0.00013	0.000483	0.00524	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000258	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	15.6067	days	
Boiling point	OPERA QSAR	367.709	degree C	
Boiling point	TEST QSAR	377.806	degree C	
Vapor pressure	OPERA QSAR	0.00000028	mmHg	
Vapor pressure	TEST QSAR	0.000000807	mmHg	
Solubility in water	OPERA QSAR	482.106	µg/L	
Solubility in water	TEST QSAR	419.9397	µg/L	
Bioconcentration factor	OPERA QSAR	3.21314	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	9506.22	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.65899	no units	
Henry's Law constant	OPERA QSAR	0.00000179	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Endosulfan sulfate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
249	USEPA. 2013. Provisional Peer-Reviewed Toxicity Values for Endosulfan Sulfate (CASRN 1031-07-8). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Epoxiconazole

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Epoxiconazole
CASRN:	133855-98-8
DTXSID:	DTXSID1040372
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.033

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action		

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.973	liver tumors in male and female mice, specifically male mouse liver adenoma and/or carcinoma combined tumor rates	general population	OPP 2005

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0318	90th Percentile	Finished Water	PDP	2001-2013

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Epoxiconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	OPP 2005	Mellert 1992 (MRID: 44335017)	increased incidences of adrenal histopathological findings and increased incidences of ovarian cysts	general population	0.0338	100	[208]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Slope Factor (CSF)	0.0304	$(mg/kg/day)^{-1}$	OPP 2005	Mellert 1992 (MRID: 44335018)	liver tumors in male and female mice, specifically male mouse liver adenoma and/or carcinoma combined tumor rates	general population	0.0338	0.973	[208]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	L		OPP 2005						[208]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.05	mg/kg/day	EPA HHBP	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	22.12	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	31.85	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.17	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.41	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	19	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Epoxiconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	3	Sites	20	0.0115	0.0202	0.0318	0.033	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
	2005	OPP				No modeled concentrations were provided by OPP because there is no expectation that epoxiconazole residues would occur in surface or ground water sources of drinking water due to its use only on imported coffee and bananas. The only expected route of exposure is via dietary (food) exposure.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000204	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Epoxiconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
208	USEPA. 2005. Epoxiconazole: PP# 7E04885 and 0E6128. Tolerance on Bananas and Coffee Exported to the US. HED Risk Assessment. PC Code: 123909, Submission #: S581060, Case #: 292957, Decision #: 303871, DP #: 268360. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

EPTC

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	EPTC
CASRN:	759-94-4
DTXSID:	DTXSID1024091
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00026

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	Based on decreased body weight and increased incidences of myocardial and neuromuscular lesions.	general population	OPP 2017; OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0789	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination for EPTC in RD 2 (2008). The EPA determined that regulating EPTC in drinking water did not present a meaningful opportunity for health risk reduction because EPTC did not appear to occur at levels of concern in PWSs based on, among other data, the following:
- No detections in UCMR 1 monitoring
- RD 2 HRL: 175 µg/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

EPTC

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2017; OPP 2016	MRIDs: 00145004; 00145311; 00161597	Based on decreased body weight and increased incidences of myocardial and neuromuscular lesions.	general population	0.0338	300	[281]; [270]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www./sdwa/2021-human-health-benchmarks-pesticides). A new (2017) OPP assessment exists but does not contribute new data for the HRL.
Cancer Classification (CC)	NL		OPP 2017; OPP 2016						[281]; [270]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.2	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.3	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.04	mg/l	MN DOH	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	
Maximum Allowable Daily Level	700	µg/day	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.09	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	112	mg/kg	NIH HSDB	min
LD50	2550	mg/kg	NIH HSDB	max
LOAEL	300	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	120	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	120	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00487529	mol/kg	TEST QSAR	
Ames mutagenicity test	0.356	no units	TEST QSAR	
Developmental toxin test	0.59	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

EPTC
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,873	0	Sites	0	ND	ND	ND		µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,128	416	Sites	4	4e-04	0.0091	0.0789	40	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	23	2645995	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	8

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	54	1	Sites	2	0.0036	0.0036	0.0036	0.0036	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	58	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	482	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	1	Sites	6	0.017	0.028	0.06	0.068	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	315	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	634	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,861	418	Sites	4	0.0004	0.0057	0.0612	8.94	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	2	Sites	17	0.008	0.028	0.137	0.2	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	296	31	Sites	10	0.005	0.0287	0.464	23	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	11	0.0116	0.0708	0.196	0.224	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.016	0.016	0.016	0.016	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000355	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.62751	days	
Boiling point	OPERA QSAR	215.905	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0239796	mmHg	
Vapor pressure	TEST QSAR	0.011508	mmHg	
Solubility in water	OPERA QSAR	372882.7788	µg/L	
Solubility in water	TEST QSAR	330518.6424	µg/L	
Bioconcentration factor	OPERA QSAR	23.7773	no units	
Bioconcentration factor	TEST QSAR	14.6893	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	239.641	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.2102	no units	
Henry's Law constant	OPERA QSAR	0.000000289	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

EPTC

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
270	USEPA. 2016. EPTC: Human Health Risk Assessment for the Proposed Section 3 Registration for use on Grasses Grown for Seed Production. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 427143.
281	USEPA. 2017. EPTC. Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: 438816.

Esfenvalerate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Esfenvalerate
CASRN:	66230-04-4
DTXSID:	DTXSID4032667
Use:	Insecticide; medication
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.1

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	73	reductions in locomotor activity	children	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
7.54		EDWC SW	OPP	2017

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Esfenvalerate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.011	mg/kg/day	OPP 2020	Wolansky et al. 2006	reductions in locomotor activity	children	0.15	73	[129]	Note: A chronic dietary endpoint was not derived for esfenvalerate because repeated chronic exposure is not expected to result in a point of departure lower than which results from acute exposure; The HRL is based on the EPA's acute Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	E		OPP 2020						[129]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.073	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.011	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.012	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	325	mg/kg	NIH HSDB	max
LD50	88	mg/kg	NIH HSDB	min
LOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	462	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	7.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	462	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000693426	mol/kg	TEST QSAR	
Ames mutagenicity test	0.3	no units	TEST QSAR	
Developmental toxin test	0.75	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Esfenvalerate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,868	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	45	138254	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	870	0	Sites	0						
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	111	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,303	125	Sites	10	0.000247	0.00751	0.065	3.48	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water (acute)	2017	OPP	7.54	µg/L	Tier I, FQPA Index Reservoir Screening Tool (FIRST) Model	The critical effect of reduced locomotor activity was based on an acute population adjusted dose and is considered a less-than-chronic response. To account for this, the modeled surface water acute concentration was selected as the occurrence concentration for esfenvalerate.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000111	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54557	days	
Boiling point	OPERA QSAR	434.889	degree C	
Boiling point	TEST QSAR	456.288	degree C	
Vapor pressure	OPERA QSAR	1.5E-09	mmHg	
Vapor pressure	TEST QSAR	1.31E-09	mmHg	
Solubility in water	OPERA QSAR	1.2849246	µg/L	
Solubility in water	TEST QSAR	118.41462	µg/L	
Bioconcentration factor	OPERA QSAR	707.188	no units	
Bioconcentration factor	TEST QSAR	240.991	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5415.87	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.1996	no units	
Henry's Law constant	OPERA QSAR	8.23E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Esfenvalerate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
129	OPP. 2020. Esfenvalerate: Updated Human Health Draft Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Ethalfluralin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ethalfluralin
CASRN:	55283-68-6
DTXSID:	DTXSID8032386
Use:	Herbicide used on used on beans, watermelons, sunflowers, cantaloupes, and cucumbers
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.23

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	6	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.33	increased mammary gland fibroadenomas and combined adenomas/fibroadenomas in female rats	general population	OPP 2020; OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0753	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ethalfluralin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2020; OPP 2023	MRIDs: 00153371, 92062014	increased urinary bilirubin, variations in erythrocyte morphology, increased thrombocyte count, and increased erythroid series of the bone marrow	general population	0.0338	200	[338]; [384]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2023) exists but does not contribute new data that impacts the HRL.
Cancer Slope Factor (CSF)	0.089	$(mg/kg/day)^{-1}$	OPP 2020; OPP 2023	MRIDs: 00094776, 92062013	increased mammary gland fibroadenomas and combined adenomas/fibroadenomas in female rats	general population	0.0338	0.33	[338]; [384]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2023) exists but does not contribute new data that impacts the HRL.
Cancer Classification (CC)	C		OPP 2020; OPP 2023						[338]; [384]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	21	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.75	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.00036	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	183.9	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	10	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1205	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	125	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1205	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	27.5	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0147571	mol/kg	TEST QSAR	
Ames mutagenicity test	0.628	no units	TEST QSAR	
Developmental toxin test	1.214	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Ethalfluralin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,560	58	Sites	0.77	0.001	0.015	0.0753	0.36	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	47	2387627	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,058	41	Sites	0.58	0.0016	0.012	0.16	0.76	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	242	2	Sites	0.83	0.041	0.0455	0.0491	0.05	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000192	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54005	days	
Boiling point	OPERA QSAR	350.902	degree C	
Boiling point	TEST QSAR	350.199	degree C	
Vapor pressure	OPERA QSAR	0.0000873	mmHg	
Vapor pressure	TEST QSAR	0.00000379	mmHg	
Solubility in water	OPERA QSAR	90.648624	µg/L	
Solubility in water	TEST QSAR	779.84478	µg/L	
Bioconcentration factor	OPERA QSAR	199.042	no units	
Bioconcentration factor	TEST QSAR	184.502	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3992.48	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.11043	no units	
Henry's Law constant	OPERA QSAR	0.000000192	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Ethalfluralin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
338	USEPA. 2020. Ethalfluralin. Human Health Risk Assessment for the Section 3 Registration on Potato. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
384	USEPA. 2023. Ethalfluralin. Human Health Risk Assessment for Proposed Section 3 Registration for New Use on Hemp, Bulb Onion Subgroup 3-07A, and Stevia Crop Group Expansions for Tuberous and Corm Vegetables Subgroup 1C, Dried Shelled Bean (except soybean) Subgroup 6-22E, and Dried Shelled Pea Subgroup 6-22F. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Ethion

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ethion
CASRN:	563-12-2
DTXSID:	DTXSID2024086
Use:	Insecticide
Chemical Notes:	Canceled pesticide. Last end of use date: 12/31/2004.

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.003

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	3	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3	plasma, red blood cell, and brain cholinesterase inhibition	general population	OPP 2001

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.009	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ethion

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0005	mg/kg/day	OPP 2001	Bailey, 1989 (MRID 41188401)	plasma, red blood cell, and brain cholinesterase inhibition	general population	0.0338	3	[197]	

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.002	mg/kg/day	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.002	mg/kg/day	CDC ATSDR	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	24.4	mg/kg	NIH HSDB	min
LD50	208	mg/kg	NIH HSDB	max
LOAEL	0.049	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	9.6	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.026	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.4	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	16	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000755	mol/kg	TEST QSAR	
Ames mutagenicity test	0.338	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Ethion

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,150	6	Sites	0.19	0.003	0.0065	0.009	0.01	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	0.22	2017

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,972	12	Sites	0.2	0.005	0.02	56.4	99.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	83	1	Sites	1	0.01	0.03	0.046	0.05	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		8.01E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	478.493	days	
Boiling point	OPERA QSAR	395.257	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000015	mmHg	
Vapor pressure	TEST QSAR	0.00000561	mmHg	
Solubility in water	OPERA QSAR	1737.85	µg/L	
Solubility in water	TEST QSAR	5805.65	µg/L	
Bioconcentration factor	OPERA QSAR	241.367	no units	
Bioconcentration factor	TEST QSAR	58.3445	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	11468.5	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.066	no units	
Henry's Law constant	OPERA QSAR	0.000000451	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Ethion

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
197	USEPA. 2001. Ethion RED. U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Ethofumesate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ethofumesate
CASRN:	26225-79-6
DTXSID:	DTXSID8034580
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.57

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	8	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	increased resorptions, post-implantation loss and incomplete ossification of the vertebral arches	females of reproductive age	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1139		EDWC GW	OPP	2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ethofumesate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.3	mg/kg/day	OPP 2020	MRIDs: 00156606, 40263701, 41652501	increased resorptions, post-implantation loss and incomplete ossification of the vertebral arches	females of reproductive age	0.0354	2000	[339]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	NL		OPP 2020						[339]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	8	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.3	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1130	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	300	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2145	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	20	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1900	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	2309	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	190	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	230	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00410204	mol/kg	TEST QSAR	
Ames mutagenicity test	0.666	no units	TEST QSAR	
Developmental toxin test	1.005	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Ethofumesate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	12	168638	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	1	Sites	10	0.0055	0.0055	0.0196	0.029	µg/L	
Ambient Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	190	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	1	Sites	10	0.017	0.017	0.017	0.017	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Groundwater (acute)	2020	OPP	1139	µg/L	Pesticide Water Calculator v1.52	The critical effect of developmental and reproductive issues in fetuses is considered a less-than-chronic response in a sensitive population. To account for this, the modeled groundwater acute concentration provided by the most recent EPA OPP exposure assessment was selected as the occurrence concentration for ethofumesate.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000007	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modelled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.72739	days	
Boiling point	OPERA QSAR	315.005	degree C	
Boiling point	TEST QSAR	344.256	degree C	
Vapor pressure	OPERA QSAR	0.00000491	mmHg	
Vapor pressure	TEST QSAR	0.00000847	mmHg	
Solubility in water	OPERA QSAR	74141.15718	µg/L	
Solubility in water	TEST QSAR	157355.5699	µg/L	
Bioconcentration factor	OPERA QSAR	1.91856	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	338.726	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.70255	no units	
Henry's Law constant	OPERA QSAR	0.00000125	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Ethofumesate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
339	USEPA. 2020. Ethofumesate: Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D455202.

Ethylene thiourea

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Ethylene thiourea
CASRN:	96-45-7
DTXSID:	DTXSID5020601
Use:	Used as an accelerator in synthetic rubber production, as a curing agent for epichlorohydrin elastomers, and in the production of some fungicides
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.43

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	3	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.492	liver tumors in female mice	general population	OPP 2024

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.21		EDWC GW	OPP	2024

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Ethylene thiourea

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0007	mg/kg/day	OPP 2024	MRID: 49140301	hypertrophy of the pars distalis of the pituitary in males (PND 90), increased TSH in both sexes and decreases in T4 in PND 4 pups, diffuse follicular cell hypertrophy of the thyroid in males (PND 90), and increased incidence of diffuse follicular cell hypertrophy of the thyroid and hypertrophy of the pars distalis of the pituitary in parental males	all infants	0.143	1	[395]	
Cancer Slope Factor (CSF)	0.0601	$(mg/kg/day)^{-1}$	OPP 2024	Kocialski 1991	liver tumors in female mice	general population	0.0338	0.492	[395]	
Cancer Classification (CC)	B2		OPP 2024						[395]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.3	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Cancer Slope Factor (CSF)	0.045	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Inhalation Unit Risk (IUR)	0.000013	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Lifetime Health Advisory	0.0006	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3000	mg/kg	NIH HSDB	max
LD50	545	mg/kg	NIH HSDB	min
LOAEL	1.79	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	20.15	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.18	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	20.15	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
TD50	3.16	mg/kg/day	NIH CPDB	min
TD50	840	mg/kg/day	NIH CPDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00691831	mol/kg	TEST QSAR	
Ames mutagenicity test	0.262	no units	TEST QSAR	
Developmental toxin test	0.604	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Ethylene thiourea

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	37,163

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000 - 500,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Groundwater (chronic, cancer)	2024	OPP	0.21	µg/L	Pesticide in Water Calculator (PWC version 1.52)	The modeled groundwater cancer chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for ethylene thiourea. This value coincides with the critical effect of liver tumors in female mice provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000575	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/L	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modelled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	6.51091	days	
Boiling point	OPERA QSAR	347.101	degree C	
Boiling point	TEST QSAR	326.741	degree C	
Vapor pressure	OPERA QSAR	0.0180064	mmHg	
Vapor pressure	TEST QSAR	0.0105925	mmHg	
Solubility in water	OPERA QSAR	20055744.72	µg/L	
Solubility in water	TEST QSAR	33518185.2	µg/L	
Bioconcentration factor	OPERA QSAR	1.82041	no units	
Bioconcentration factor	TEST QSAR	0.64121	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	7.32476	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.65983	no units	
Henry's Law constant	OPERA QSAR	3.86E-09	atm-m^3/mol	

Ethylene thiourea

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
395	USEPA. 2024. Mancozeb and Ethylene Thiourea (ETU): Second Revision: Draft Human Health Risk Assessment (DRA) for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Fenbuconazole

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fenbuconazole
CASRN:	114369-43-6
DTXSID:	DTXSID8032548
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.2

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	Carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	8.24	combined hepatocellular adenomas/carcinomas in female mice	general population	OPP 2013; OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
10.09		EDWC SW (chronic, cancer)	OPP	2021

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fenbuconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	OPP 2013; OPP 2021	MRIDs: 41635301, 41635302	decreased body weight in females, increased cholesterol, increased thyroid and liver weight, and histopathological lesions in the liver (vacuolation) and thyroid gland (follicular cell cystic hyperplasia)	general population	0.0338	200	[247]; [359]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data that impact the HRL.
Cancer Slope Factor (CSF)	0.00359	$(mg/kg/day)^{-1}$	OPP 2013; OPP 2021	Williams-Foy 1996; Fisher 1996	combined hepatocellular adenomas/carcinomas in female mice	general population	0.0338	8.24	[247]; [359]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data that impact the HRL.
Cancer Classification (CC)	C		OPP 2013; OPP 2021						[247]; [359]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	8	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.3	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	208.84	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	3.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.38	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	208.84	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	27	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	139.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	5.1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	139.2	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00348337	mol/kg	TEST QSAR	
Ames mutagenicity test	0.752	no units	TEST QSAR	
Developmental toxin test	0.488	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fenbuconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	30	41518	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	1	Sites	8	0.057	0.057	0.057	0.057	ug/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	332	1	Sites	0.3	0.0217	0.0217	0.0217	0.0217	ug/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.00667	0.00667	0.00667	0.00667	ug/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water (chronic, cancer)	2021	OPP	10.09	µg/L	Pesticide in Water Calculator (PWC), v1.52	The modeled surface water chronic, cancer concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for fenbuconazole. This value coincides with the critical effects of thyroid and liver adenomas and carcinomas provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000303	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35388	days	
Boiling point	OPERA QSAR	349.411	degree C	
Boiling point	TEST QSAR	445.687	degree C	
Vapor pressure	OPERA QSAR	3.74E-08	mmHg	
Vapor pressure	TEST QSAR	5.66E-09	mmHg	
Solubility in water	OPERA QSAR	380.6066	µg/L	
Solubility in water	TEST QSAR	5591.212	µg/L	
Bioconcentration factor	OPERA QSAR	282.501	no units	
Bioconcentration factor	TEST QSAR	132.739	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	891.163	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.2286	no units	
Henry's Law constant	OPERA QSAR	0.00000393	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fenbuconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
247	USEPA. 2013. HED Human Health Risk Assessment for an Increased Tolerance for Residues in Peppers, and a Label Amendment for the Enable® 2F Product. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
359	USEPA. 2021. Fenbuconazole. Revised Acute, Chronic, and Cancer Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for the Registration Review Risk Assessment. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fenitrothion

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fenitrothion
CASRN:	122-14-5
DTXSID:	DTXSID4032613
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.1

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	non-cancer effects		

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.77	plasma chloinesterase inhibition and histopathology of lymph nodes	general population	OPP 2010

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.078	90th Percentile	All Ambient Water	SURF	1990 - 2018

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fenitrothion

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00013	mg/kg/day	OPP 2010	MRID: 40058501	plasma chloinesterase inhibition and histopathology of lymph nodes	general population	0.0338	0.77	[238]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	E		OPP 2010						[238]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0017	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.00025	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1720	mg/kg	NIH HSDB	max
LD50	500	mg/kg	NIH HSDB	min
LOAEL	0.25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	144.32	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.125	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	144.32	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	18	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	11.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	0.64	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	11.2	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000112202	mol/kg	TEST QSAR	
Ames mutagenicity test	0.548	no units	TEST QSAR	
Developmental toxin test	0.713	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fenitrothion
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7	0	Sites	0						
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	636	1	Sites	0.16	0.078	0.078	0.078	0.078	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
	2010	OPP		µg/L		No modeled concentrations were provided by OPP because "it is highly unlikely that fenitrothion will reach drinking water resources…" due to its selective uses in ant and roach bait traps. "The only route of [oral] exposure … is in the diet from imported wheat."

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000138	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.30509	days	
Boiling point	OPERA QSAR	353.167	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000528	mmHg	
Vapor pressure	TEST QSAR	0.000016	mmHg	
Solubility in water	OPERA QSAR	28996.31739	µg/L	
Solubility in water	TEST QSAR	17215.983	µg/L	
Bioconcentration factor	OPERA QSAR	89.0529	no units	
Bioconcentration factor	TEST QSAR	57.1479	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	427.929	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.30116	no units	
Henry's Law constant	OPERA QSAR	0.000000923	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fenitrothion

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
238	USEPA. 2010. Fenitrothion. Risk Assessment to Support Final Registration Review Decision. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D383647.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fenpropathrin

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fenpropathrin
CASRN:	39515-41-8
DTXSID:	DTXSID0024002
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.034

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	decreased motor activity	children	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
10.3		EDWC SW	OPP	2016

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fenpropathrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2019	Wolansky et al. 2006	decreased motor activity	children	0.15	300	[310]	Note: The HRL is based on the EPA's acute Human Health Benchmark for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). An aPAD used to derive the HHBP because "The acute assessment is protective of potential repeat-dose dietary exposure and risk."
Cancer Classification (CC)	NL		OPP 2019						[310]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.05	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	66.7	mg/kg	NIH HSDB	min
LD50	70.6	mg/kg	NIH HSDB	max
LOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	65.2	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.4	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	65.2	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	30	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	6.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	6.25	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000474242	mol/kg	TEST QSAR	
Ames mutagenicity test	0.248	no units	TEST QSAR	
Developmental toxin test	0.825	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fenpropathrin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	23	119650	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	361	0	Sites	0						
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,079	78	Sites	7	0.000502	0.0104	0.126	2.979733	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Limit of solubility surrogate for occurrence concentration, Surface Water Peak	2016	OPP	10.3	µg/L		Fenpropathrin is very insoluble in water and residues in drinking water are expected to be very low. Therefore, no modeling of estimated occurrence was conducted and the limit of solubility of fenpropathrin (10.3 ppb) reported in the most recent EPA OPP health assessment was used as a surrogate for the peak expected occurrence concentration.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000914	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.5427	days	
Boiling point	OPERA QSAR	370.489	degree C	
Boiling point	TEST QSAR	414.903	degree C	
Vapor pressure	OPERA QSAR	0.00000345	mmHg	
Vapor pressure	TEST QSAR	0.000000011	mmHg	
Solubility in water	OPERA QSAR	74.07916	µg/L	
Solubility in water	TEST QSAR	79.67004	µg/L	
Bioconcentration factor	OPERA QSAR	217.706	no units	
Bioconcentration factor	TEST QSAR	744.732	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	17263.6	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.69778	no units	
Henry's Law constant	OPERA QSAR	0.000000107	atm-m^3/mol	

Fenpropathrin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
271	USEPA. 2016. Fenpropathrin. Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2010-0422-0017. DP No. D425768. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
310	USEPA. 2019. Fenpropathrin: Revised Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fipronil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fipronil
CASRN:	120068-37-3
DTXSID:	DTXSID4034609
Use:	insecticide, seed treatment/protectant
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.017

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reduced longevity	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1	increased incidence of seizures and death, alterations in clinical chemistry (protein)	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.017	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fipronil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0002	mg/kg/day	OPP 2020	Aughton 1993	increased incidence of seizures and death, alterations in clinical chemistry (protein)	general population	0.0338	1	[342]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	C		OPP 2020						[342]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.17	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.025	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.001	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	103	mg/kg	NIH HSDB	max
LD50	91	mg/kg	NIH HSDB	min
LOAEL	0.059	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	28.4	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.019	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	28.4	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	37	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.32	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	24.03	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.08	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	24.03	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fipronil
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,003	427	Sites	9	0.00021	0.00558	0.017	6.41	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	9	16227	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	8	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	8,610	685	Sites	8	0.00014	0.007	0.03	0.306	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	11	Sites	10	0.00058	0.0014	0.00531	0.013	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	4	Sites	50	0.00058	0.00058	0.00132	0.006	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	482	197	Sites	41	0.00022	0.0305	0.133	2.11	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	17	Sites	45	0.0066	0.0238	0.0948	0.153	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	4	Sites	0.58	0.001	0.0014	0.00255	0.003	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50	0.001	0.001	0.001	0.001	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	119	5	Samples	4				0.041	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	19	Sites	90	0.00293	0.0136	0.0555	0.13871	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000182	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54338	days	
Boiling point	OPERA QSAR	336.486	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.77E-09	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	2697.1538	µg/L	
Solubility in water	TEST QSAR	28414.1	µg/L	
Bioconcentration factor	OPERA QSAR	5.12794	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	411.369	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.99786	no units	
Henry's Law constant	OPERA QSAR	9.16E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fipronil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
342	USEPA. 2020. Fipronil: Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2011-0448-0076. DP No. D431560. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fludioxonil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fludioxonil
CASRN:	131341-86-1
DTXSID:	DTXSID2032398
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.024

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	Based on decreased absolute body weights, increased platelets and fibrin in both sexes, cholesterol in males, and increased alkaline phosphatase release in both sexes. Enlarged livers in two females were also observed along with biliary epithelial cell proliferation in one female.	general population	OPP 2023; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
48.34		EDWC, GW (chronic)	OPP	2023

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fludioxonil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.33	mg/kg/day	OPP 2023; OPP 2020	MRID: 43080031	Based on decreased absolute body weights, increased platelets and fibrin in both sexes, cholesterol in males, and increased alkaline phosphatase release in both sexes. Enlarged livers in two females were also observed along with biliary epithelial cell proliferation in one female.	general population	0.0338	2000	[385]; [523.1]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2023) exists but does not contribute new data for HRL
Cancer Classification (CC)	D		OPP 2023; OPP 2020						[385]; [523.1]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	1008	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	35.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1008	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.3	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	31	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1307	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1288	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000270396	mol/kg	TEST QSAR	
Ames mutagenicity test	0.754	no units	TEST QSAR	
Developmental toxin test	1.069	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fludioxonil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	8	58366	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	11	1	Sites	9	0.0624	0.0624	0.0624	0.0625	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	328	8	Sites	2	0.0041	0.0253	0.0868	0.121	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	141	11	Sites	8	0.0077	0.0345	0.148	0.745	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0215	0.0234	0.0249	0.0253	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater, Chronic	2023	OPP	48.34	µg/L	Pesticide in Water Calculator (PWC) v2.001)	The modeled groundwater, chronic concentration provided by the most recent EPA OPP risk assessment was selected as the occurrence concentration for fludoxionil. This value coincides with the chronic toxological effects provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000219	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54425	days	
Boiling point	OPERA QSAR	350.567	degree C	
Boiling point	TEST QSAR	407.977	degree C	
Vapor pressure	OPERA QSAR	2.94E-09	mmHg	
Vapor pressure	TEST QSAR	3.59E-08	mmHg	
Solubility in water	OPERA QSAR	1714.98599	µg/L	
Solubility in water	TEST QSAR	6527.3707	µg/L	
Bioconcentration factor	OPERA QSAR	8.9758	no units	
Bioconcentration factor	TEST QSAR	45.1856	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2639.59	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.11566	no units	
Henry's Law constant	OPERA QSAR	4.53E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fludioxonil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
523.1	USEPA. 2020. Human Health Risk Assessment for Section 3 Registration for Crop Group Conversions/Expansions for Brassica, Leafy Greens, Subgroup 4-16B, Vegetable and Brassica, Head and Stem, Group 5-16 and to Establish an Individual Tolerance on Kohlrabi. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
385	USEPA. 2023. Fludioxonil. Human Health Risk Assessment for Section 3 Registrntion to Establish an Individual Tolerance for Residues in/on Cranbeny. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D466001.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Flufenacet

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Flufenacet
CASRN:	142459-58-3
DTXSID:	DTXSID2032552
Use:	Preemergent herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0309

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	reproductive and developmental effects	6	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	decreased pup body weight, delayed eye opening, delayed preputial separation, decreased caudate putamen size	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.309	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Flufenacet

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0017	mg/kg/day	OPP 2015	Hoberman 2000	decreased pup body weight, delayed eye opening, delayed preputial separation, decreased caudate putamen size	general population	0.0338	10	[255]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	NL		OPP 2015						[255]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.011	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0017	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.011	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2347	mg/kg	NIH HSDB	max
LD50	371	mg/kg	NIH HSDB	min
LOAEL	1.2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.14	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	16	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1134	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	6	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.67	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1134	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00399945	mol/kg	TEST QSAR	
Ames mutagenicity test	0.556	no units	TEST QSAR	
Developmental toxin test	0.742	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Flufenacet

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	550	5	Sites	0.91	0.02	0.04	0.309	0.44	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	19	600995	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6	0.04	0.04	0.04	0.04	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	4	1	Sites	25	0.075	0.075	0.075	0.075	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,550	110	Sites	7	0.02	0.05	0.2	1.6	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000025	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54132	days	
Boiling point	OPERA QSAR	350.458	degree C	
Boiling point	TEST QSAR	362.085	degree C	
Vapor pressure	OPERA QSAR	0.000000676	mmHg	
Vapor pressure	TEST QSAR	0.000000151	mmHg	
Solubility in water	OPERA QSAR	55930.65687	µg/L	
Solubility in water	TEST QSAR	13225.212	µg/L	
Bioconcentration factor	OPERA QSAR	10.9572	no units	
Bioconcentration factor	TEST QSAR	51.9996	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1766.01	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.19999	no units	
Henry's Law constant	OPERA QSAR	8.13E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Flufenacet

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
255	USEPA. 2015. Flufenacet: Human Health Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2010-0863-0017. DP No. D416546. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Flumetsulam

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Flumetsulam
CASRN:	98967-40-9
DTXSID:	DTXSID4032615
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000035

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	6000	Renal inflammation and atrophic changes secondary to renal calculi and hepatic effects (inflammation, focal necrosis, biliary stasis).	general population	OPP 2013

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.212	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Flumetsulam

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	1	mg/kg/day	OPP 2013	MRID: 41952103	Renal inflammation and atrophic changes secondary to renal calculi and hepatic effects (inflammation, focal necrosis, biliary stasis).	general population	0.0338	6000	[246]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides) for more information.
Cancer Classification (CC)	E		OPP 2013						[246]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	6	mg/l	Health-based screening levels from USGS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	5000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2500	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.736	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Flumetsulam

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,171	114	Sites	3	0.00172	0.0386	0.212	6.81	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	37	385538	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	3	Sites	18	0.00999	0.01	0.0234	0.1	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,225	139	Sites	3	0.00166	0.044	0.152	1.42	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	1	Sites	0.46	0.0155	0.0155	0.0155	0.0155	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	3	Sites	25	0.00999	0.01	0.024	0.098	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	5	Sites	0.72	0.0066	0.0276	0.0327	0.0355	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000227	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.29121	days	
Boiling point	OPERA QSAR	305.611	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.8E-12	mmHg	
Vapor pressure	TEST QSAR	1.4E-09	mmHg	
Solubility in water	OPERA QSAR	525431.1783	µg/L	
Solubility in water	TEST QSAR	35421.80397	µg/L	
Bioconcentration factor	OPERA QSAR	2.52379	no units	
Bioconcentration factor	TEST QSAR	5.98412	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	28.2563	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.60967	no units	
Henry's Law constant	OPERA QSAR	0.000000057	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Flumetsulam

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
246	USEPA. 2013. Flumetsulam. Preliminary Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D411276

Fluometuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fluometuron
CASRN:	2164-17-2
DTXSID:	DTXSID8020628
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.66

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1.6	Lung tumors in CD-1 mice (M); Lymph Nodes tumors in CD-1 mice (F)	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.05	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fluometuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	OPP 2020	1-yr Dog Feeding Study (MRIDs 40779001, 41189501)	Decreased body weight, hemoglobin (↓9-20%), hematocrit (↓2-11 %), RBC's (↓11-12%); increases in total bilirubin (↑79-139%), Heinz & Howell-Jolly bodies (↑31-120%), bizarre behavior (not further defined), hyperactivity and hypoactivity, hypertonia, panting, restricted movement, inhibition of the righting reflex, and one incidence of tremors only in the high-dose males, and cyanosis of tongue/gums only at the high dose in both sexes.	general population	0.0338	830	[343]	
Cancer Slope Factor (CSF)	0.018	$(mg/kg/day)^{-1}$	OPP 2020	Fisher 1996	Lung tumors in CD-1 mice (M); Lymph Nodes tumors in CD-1 mice (F)	general population	0.0338	1.6	[343]	
Cancer Classification (CC)	C		OPP 2020						[343]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	2	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Lifetime Health Advisory	0.09	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice E	no units	HHS NTP	E = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	6416	mg/kg	NIH HSDB	max
LD50	810	mg/kg	NIH HSDB	min
LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	6	percent	EPA Chemistry Dashboard	
TD50	1420	mg/kg/day	NIH CPDB	max
TD50	55.4	mg/kg/day	NIH CPDB	min

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00319154	mol/kg	TEST QSAR	
Ames mutagenicity test	0.047	no units	TEST QSAR	
Developmental toxin test	0.851	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fluometuron
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,619	231	Sites	3	0.00029	0.07	1.05	37.6	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	13	1697815	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	52	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	3	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	6	Sites	40	0.001998	0.007	0.007	0.042	µg/L	
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	24	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,609	214	Sites	3	0.00011	0.31	17.3	763	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	8	Sites	4	0.006993	0.083	0.22	0.229	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	6	Sites	60	0.001998	0.007	0.007	0.1	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	52	1	Sites	2	3	3	3	3	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	8	0.0086	0.014	0.0168	0.0175	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	7	Sites	1	3e-04	0.0011	0.0315	0.0514	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	2	Samples	2				0.02	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000646	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.49092	days	
Boiling point	OPERA QSAR	302.891	degree C	
Boiling point	TEST QSAR	280.864	degree C	
Vapor pressure	OPERA QSAR	0.00000094	mmHg	
Vapor pressure	TEST QSAR	0.000000807	mmHg	
Solubility in water	OPERA QSAR	90300.03707	µg/L	
Solubility in water	TEST QSAR	143177.0586	µg/L	
Bioconcentration factor	OPERA QSAR	10.1565	no units	
Bioconcentration factor	TEST QSAR	28.774	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	79.5767	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.42095	no units	
Henry's Law constant	OPERA QSAR	9.18E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fluometuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
343	USEPA. 2020. Fluometuron: Draft Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2015-0746-0018. DP No. D456083. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fluoranthene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fluoranthene
CASRN:	206-44-0
DTXSID:	DTXSID3024104
Use:	Polycyclic aromatic hydrocarbon; occurs as a result of incomplete burning
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
0.00039

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	nephropathy, increased liver weights, hematological alterations, and clinical effects	general population	IRIS 1990

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.078	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fluoranthene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	IRIS 1990	USEPA 1988	nephropathy, increased liver weights, hematological alterations, and clinical effects	general population	0.0338	200	[170]	
Reference Dose (RfD) or Equivalent	0.0125	mg/kg/day	WHO 2003	USEPA 1988	nephropathy, increased liver weights, hematological alterations, and clinical effects	general population	0.0338	74.0	[406]	
Cancer Classification (CC)	I		PPRTV 2012						[244]	I = Inadequate evidence to determine carcinogenic potential
			ATSDR 1995						[6]	NOTE: this assessment only derived an intermediate-duration MRL for fluoranthene. This MRL was not considered for HRL derivation because chronic RfDs exist from other qualifying sources.
Cancer Classification (CC)	D		IRIS 1990						[170]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						12/1/2011	3/13/2020	818	0	7	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	0.07	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.02	mg/l	EPA Human Health Criteria for CWA	
Intermediate Minimal Risk Level (MRL)	0.4	mg/kg/day	CDC ATSDR	
Provisional Subchronic Provisional RfD	0.1	mg/kg/day	EPA PPRTV	
Subchronic Health-Based Guidance Value	0.2	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	13	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00490908	mol/kg	TEST QSAR	
Ames mutagenicity test	0.836	no units	TEST QSAR	
Developmental toxin test	0.74	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Fluoranthene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	586	69	Sites	12	0.003	0.02	0.078	0.4	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	1	Sites	2	0.005	0.005	0.005	0.005	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	20	1	Sites	5	0.002	0.002	0.002	0.002	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	481	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0		ND		0	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	90	1	Sites	1	0.034	0.034	0.034	0.034	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	634	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,123	853	Sites	17	0.002	0.047	2.2	170	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0				0.0105	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	15	Sites	39	0.0045	0.0122	0.0339	0.0564	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95	0.011	1.59	10	36.7	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	5	Sites	24						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000145	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	147.199	days	
Boiling point	OPERA QSAR	393.972	degree C	
Boiling point	TEST QSAR	378.496	degree C	
Vapor pressure	OPERA QSAR	0.00000908	mmHg	
Vapor pressure	TEST QSAR	0.000000371	mmHg	
Solubility in water	OPERA QSAR	228.54928	µg/L	
Solubility in water	TEST QSAR	64.317408	µg/L	
Bioconcentration factor	OPERA QSAR	3528.4	no units	
Bioconcentration factor	TEST QSAR	480.839	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	63177.5	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.16033	no units	
Henry's Law constant	OPERA QSAR	0.00000892	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fluoranthene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
6	ATSDR. 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
170	USEPA. 1990. Chemical Assessment Summary, Fluoranthene. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
244	USEPA. 2012. Provisional Peer-Reviewed Toxicity Values for Fluoranthene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
406	WHO. 2003. Guidelines for Drinking Water Quality: Polynyclear Aromatic Hydrocarbons (PAHs). World Health Organization (WHO), Geneva, Switzerland.

Fluridone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fluridone
CASRN:	59756-60-4
DTXSID:	DTXSID8024107
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.12

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	890	Increased alkaline phosphatase activity and increased incidence of hepatocellular hyperplasia.	general population	OPP 2022; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
107		EDWC GW	OPP	2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fluridone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OPP 2022; OPP 2020	MRIDs: 00103252, 00103335	Increased alkaline phosphatase activity and increased incidence of hepatocellular hyperplasia.	general population	0.0338	890	[376]; [344]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer (2022) OPP assessment exists but does not contribute new data for HRL
Cancer Classification (CC)	NL		OPP 2022; OPP 2020						[376]; [344]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	8.33	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	1.25	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	max
LD50	250	mg/kg	NIH HSDB	min
LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	13	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.635	no units	TEST QSAR	
Developmental toxin test	0.995	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fluridone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1	1	Sites	100	0.0044	0.0044	0.0044	0.0044	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	5	23770	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	307	90	Sites	29	0.0016	0.0185	0.167	15	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	97	45	Sites	46	0.0038	0.0244	0.215	28.8	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.0055	0.00614	0.00664	0.00677	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Surface Water (chronic, non-cancer)	2022	OPP	107	µg/L	Tier I Rice Model v2.0	The modeled surface water chronic concentration provided by the most recent EPA OPP exposure assessment was selected as the occurrence concentration for fluridone. This value coincides with the critical effects of increased alkaline phosphatase activity and increased incidence of hepatocellular hyperplasia provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000372	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.55422	days	
Boiling point	OPERA QSAR	364.218	degree C	
Boiling point	TEST QSAR	381.104	degree C	
Vapor pressure	OPERA QSAR	9.74E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000114	mmHg	
Solubility in water	OPERA QSAR	11987.3208	µg/L	
Solubility in water	TEST QSAR	16663.6932	µg/L	
Bioconcentration factor	OPERA QSAR	49.5444	no units	
Bioconcentration factor	TEST QSAR	83.1764	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	710.721	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.04637	no units	
Henry's Law constant	OPERA QSAR	2.24E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fluridone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
344	USEPA. 2020. Fluridone. Human Health Risk Assessment for the Section 3 Registration on: Avocado, Mandarin (Tangerine), Pistachio, Pomegranate, and Stone Fmit (Crop Group 12-12). U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D450625.
376	USEPA. 2022. Fluridone. Human Health Risk Assessment for the Section 3 Registration Action on Pome Fruit (Crop Group 11-10); Berry and Small Fruit (Crop Group 13-07); Grass Forage (Crop Group 17); Non-grass Animal Feed (Crop Group 18); Tropical and Subtropical, Small Fruit, Edible Peel (Crop Subgroup 23A); Rice; Peanut; Hops; and Crop Group Conversions/Expansions. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D464042.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Fonofos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Fonofos
CASRN:	944-22-9
DTXSID:	DTXSID2024113
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0047

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	plasma and erythrocyte cholinesterase inhibition, increases in alkaline phosphatase levels, clinical signs of toxicity, decreases in selected blood chemistry values, increases in liver weights, and histologic changes in the ileum	general population	OW 2008

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0466	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination for fonofos in RD 2 (2008). The EPA identified that fonofos did not appear to occur at levels of health concern in public water systems based on, among other data, the following:
- No detections in UCMR 1 monitoring
- RD 2 HRL = 0.014 mg/L (rounded to 10 µg/L)

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Fonofos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	OW 2008	Hodge 1995	plasma and erythrocyte cholinesterase inhibition, increases in alkaline phosphatase levels, clinical signs of toxicity, decreases in selected blood chemistry values, increases in liver weights, and histologic changes in the ileum	general population	0.0338	10	[225]	Children are a potentially sensitive population based on repro/dev effects observed in mouse studies at higher doses than the critical NOAEL; "Because the current RfD for fonofos is based on a NOAEL...far below the levels that caused these effects, this leads us to believe that children should be adequately protected." An HRL of 10 µg/L was derived in the 2008 HESD using the RfD and a 20% RSC.
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	IRIS 1987	Stauffer Chemical Co. 1969	cholinesterase inhibition, cholinergic symptoms, and increased liver weight	general population	0.0338	10	[156]	
Cancer Classification (CC)	NL		OW 2008						[225]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.02	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.01	mg/l	EPA DWSHA 2018	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	24.5	mg/kg	NIH HSDB	max
LD50	8	mg/kg	NIH HSDB	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000121899	mol/kg	TEST QSAR	
Ames mutagenicity test	0.038	no units	TEST QSAR	
Developmental toxin test	0.368	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Fonofos

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	295	0	Sites	0	ND	ND	ND		µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,569	111	Sites	1.05	5e-04	0.007	0.0466	1.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	0	2010

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	1	Sites	7.69	0.00749	0.00749	0.00749	0.015	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,710	88	Sites	0.69	0.001	0.0156	0.134	3.2	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	720	19	Sites	2.64	0.01	0.053	0.188	0.54	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000139	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	211.048	days	
Boiling point	OPERA QSAR	330.955	degree C	
Boiling point	TEST QSAR	249.951	degree C	
Vapor pressure	OPERA QSAR	0.000336984	mmHg	
Vapor pressure	TEST QSAR	0.0000802	mmHg	
Solubility in water	OPERA QSAR	11367.7314	µg/L	
Solubility in water	TEST QSAR	7830.285	µg/L	
Bioconcentration factor	OPERA QSAR	761.774	no units	
Bioconcentration factor	TEST QSAR	86.6962	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	870.179	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.94092	no units	
Henry's Law constant	OPERA QSAR	0.00000361	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Fonofos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
92	Hodge, M. 1995. Fonofos: 1-Year Old Toxicity Study in Dogs. Report Number CTL/P/4499, Study Number PDO944. Zeneca Central Toxicology Lab.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
156	USEPA. 1987. Chemical Assessment Summary, Fonofos; CASRN 944-22-9. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
225	USEPA. 2008. Health Effects Support Document for Fonofos. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.

Galaxolide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Galaxolide
CASRN:	1222-05-5
DTXSID:	DTXSID8027373
Use:	Fragrance ingredient in perfumes, soaps, cosmetics, and detergents.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0000075

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	no adverse effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	22000	no adverse effects at the highest dose tested	general population	ECHA 2011

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.164	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Galaxolide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	3.8	mg/kg/day	ECHA 2011	Api and Ford 1999	no adverse effects at the highest dose tested	general population	0.0338	22000	[54]	Derived No Effect Level reported as RfD

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic	5	Api, 1999	Respiratory, Reproductive, Ocular, Neurological, Musculoskeletal, Renal, Immunologic, Hematologic, Gastrointestinal, Endocrine, Systemic	150	Api, 1999	Not date limited	4/6/2020	385	2	0	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4640	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	34	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00320627	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.048	no units	TEST QSAR	
Developmental toxin test	0.709	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Galaxolide

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	566	56	Sites	10	0.007	0.054	0.164	2.4	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	5	Sites	10	0.009	0.042	0.0742	0.097	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	1	Sites	14	0.011	0.0315	0.0491	0.056	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	24		0.0365		0.061	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,214	739	Sites	23	0.003	0.041	0.28	4.6	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	36		0.028		0.11	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	20	Sites	53	0.0076	0.285	1.03	1.4	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	9	Sites	43	0.014	0.032	0.0932		µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0				0.005	µg/L	
Waste Water Effluent			Prevalence					Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	21	Sites	100	0.49	1.2	2.00	4.6	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000105	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	25.0139	days	
Boiling point	OPERA QSAR	325.002	degree C	
Boiling point	TEST QSAR	312.099	degree C	
Vapor pressure	OPERA QSAR	0.000540769	mmHg	
Vapor pressure	TEST QSAR	0.000385478	mmHg	
Solubility in water	OPERA QSAR	1736.4816	µg/L	
Solubility in water	TEST QSAR	3876.075	µg/L	
Bioconcentration factor	OPERA QSAR	787.789	no units	
Bioconcentration factor	TEST QSAR	1667.25	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	74355.3	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.89831	no units	
Henry's Law constant	OPERA QSAR	0.000304491	atm-m^3/mol	

Galaxolide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
54	ECHA. 2011. Registration Dossier: 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethylindeno[5,6-c]pyran. European Chemicals Agency (ECHA), Helsinki, Finland. https://echa.europa.eu/registration-dossier/-/registered-dossier/14504/1. Accessed 09/20/2024
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Hexazinone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Hexazinone
CASRN:	51235-04-2
DTXSID:	DTXSID4024145
Use:	Post emergence contact herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000050

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	decreased body weight, hepatotoxicity (clinical chemical changes and microscopic lesions)	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.015	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Hexazinone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2015	Dalgard 1991	decreased body weight, hepatotoxicity (clinical chemical changes and microscopic lesions)	general population	0.0338	300	[256]	
Cancer Classification (CC)	D		OPP 2015						[256]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	2	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.4	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3400	mg/kg	NIH HSDB	max
LD50	860	mg/kg	NIH HSDB	min
LOAEL	1915	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	37.57	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1635	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4.97	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	122.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	450.7	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	25.9	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	450.7	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00744732	mol/kg	TEST QSAR	
Ames mutagenicity test	0.624	no units	TEST QSAR	
Developmental toxin test	1.093	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Hexazinone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,710	445	Sites	9.4	0.00011	0.00249	0.015	1.23	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	21	651,558	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	866

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	7	Sites	13	0.012	0.0275	0.0758	0.087	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	1	Sites	5.00	0.014	0.0175	0.0203	0.021	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	3	Sites	30	8e-04	8e-04	0.0025	0.087	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	2	Sites	8.00	0.0065	0.0076	0.00848	0.0087	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,818	508	Sites	6.00	1e-04	0.01	0.0435	2.27	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	14	Sites	6.00	8e-04	0.0046	0.0122	0.021	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	3	Sites	30	8e-04	8e-04	0.00425	0.11	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	357	94	Sites	26	0.0079	0.0223	0.118	35	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	7	Sites	18	0.0029	0.0168	0.036	0.0466	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	39	Sites	6.00	3e-04	0.0016	0.00666	0.0929	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	71	19	Samples	27				0.097	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	2	Sites	10	0.012	0.0306	0.0455	0.0492	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000894	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.71849	days	
Boiling point	OPERA QSAR	316.781	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000225	mmHg	
Vapor pressure	TEST QSAR	0.000000111	mmHg	
Solubility in water	OPERA QSAR	32811180.4	µg/L	
Solubility in water	TEST QSAR	1949613.246	µg/L	
Bioconcentration factor	OPERA QSAR	2.41846	no units	
Bioconcentration factor	TEST QSAR	5.98412	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	53.7751	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.84923	no units	
Henry's Law constant	OPERA QSAR	0.00000108	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Hexazinone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
256	USEPA. 2015. Hexazinone: Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2009-0755-0019. DP No. D424526. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Hydramethylnon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Hydramethylnon
CASRN:	67485-29-4
DTXSID:	DTXSID6023868
Use:	Insecticide used to control ants, cockroaches, crickets, and termites
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.013

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	testicular effects (degeneration of the germinal epithelium and aspermia)	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.27		EDWC SW	OPP	2018

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Hydramethylnon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.017	mg/kg/day	OPP 2018	MRID: 43741501	testicular effects (degeneration of the germinal epithelium and aspermia)	general population	0.0338	100	[292]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	C		OPP 2018						[292]	Note: "The Reference Dose approach should be used for the quantification of human risk." C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Maximum Allowable Daily Level	120	µg/day	CalEPA OEHHA Chemical Database	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1131	mg/kg	NIH HSDB	
LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	33.1	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	33.1	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	52	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	20	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0009977	mol/kg	TEST QSAR	
Ames mutagenicity test	0.295	no units	TEST QSAR	
Developmental toxin test	1.188	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 3 - >= 0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Hydramethylnon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	13	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	0.2

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	12	1	Sites	8.33	0.289	0.289	0.289	0.289	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water (chronic)	2018	OPP	1.27	µg/L	Pesticide in Water Calculator (PWC version 1.52)	The modeled surface water chronic concentration provided by the most recent available EPA OPP health assessment was selected as the occurrence value for hydramethylnon. This value coincides with the critical testicular effects provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000263	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54943	days	
Boiling point	OPERA QSAR	345.325	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.02E-08	mmHg	
Vapor pressure	TEST QSAR	2.14E-08	mmHg	
Solubility in water	OPERA QSAR	2.2293282	µg/L	
Solubility in water	TEST QSAR	12.1968204	µg/L	
Bioconcentration factor	OPERA QSAR	241.823	no units	
Bioconcentration factor	TEST QSAR	78.343	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	722443	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.31318	no units	
Henry's Law constant	OPERA QSAR	0.000000059	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Hydramethylnon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
292	USEPA. 2018. Hydramethylnon. Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D439598.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Imazalil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Imazalil
CASRN:	35554-44-0
DTXSID:	DTXSID8024151
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.23

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear MOA	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.484	liver tumors in mice	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.111	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Imazalil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.108	mg/kg/day	OPP 2018	MRID 44858001	Based on reductions in body weight and weight gain and macro and microscopic effects in the liver (M/F) and thyroid (M)	general population	0.0338	639	[124]	Note: The HRL is based on the EPA's acute Human Health Benchmark for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Slope Factor (CSF)	0.0611	$(mg/kg/day)^{-1}$	OPP 2018	MRID 44858001	liver tumors in mice	general population	0.0338	0.484	[124]	Note: The HRL is based on the EPA's acute Human Health Benchmark for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	L		OPP 2018						[124]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.1	mg/kg/day	EPA HHBP	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	227	mg/kg	NIH HSDB	min
LD50	640	mg/kg	NIH HSDB	max
LOAEL	168.8	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	168.8	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	41	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	76.4	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	76.4	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00289734	mol/kg	TEST QSAR	
Ames mutagenicity test	0.541	no units	TEST QSAR	
Developmental toxin test	0.281	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Imazalil
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	1	Sites	7.7	0.0684	0.0684	0.0684	0.0684	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	34,107	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	2	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	332	9	Sites	2.71	0.0116	0.0517	0.111	0.263	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	83	5	Sites	6.02	0.0116	0.03	0.102	0.1189	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	7.89	0.0517	0.0521	0.221	0.2634	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21		Sites	0				5.25E-03	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
	2018	OPP				No modeled concentrations were provided by OPP due to no exposure expected through drinking water sources. The uses of imazalil are as a post-harvest citrus fruit treatment and disinfection of hatchery equipment, which "are not anticipated to result in residues in drinking water".

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000866	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35742	days	
Boiling point	OPERA QSAR	346.993	degree C	
Boiling point	TEST QSAR	344.153	degree C	
Vapor pressure	OPERA QSAR	0.0000012	mmHg	
Vapor pressure	TEST QSAR	0.00000314	mmHg	
Solubility in water	OPERA QSAR	113021.5967	µg/L	
Solubility in water	TEST QSAR	60448.87899	µg/L	
Bioconcentration factor	OPERA QSAR	35.1016	no units	
Bioconcentration factor	TEST QSAR	168.655	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5334.19	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.81811	no units	
Henry's Law constant	OPERA QSAR	0.0000132	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Imazalil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
124	OPP. 2018. Imazalil and Imazalil Sulfate Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D445408
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Imazaquin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Imazaquin
CASRN:	81335-37-7
DTXSID:	DTXSID3024152
Use:	Herbicide used on broad leaved weeds in soya beans
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00013

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1500	decreased body weights, slight anemia, clinical chemistry/hematology changes, and evidence of skeletal muscle myopathy	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.20	90th Percentile	Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Imazaquin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.25	mg/kg/day	OPP 2018	MRID 00138972	decreased body weights, slight anemia, clinical chemistry/hematology changes, and evidence of skeletal muscle myopathy	general population	0.0338	1500	[293]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	NL		OPP 2018						[293]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	1.6	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2363	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	600	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	150	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	600	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.011298	mol/kg	TEST QSAR	
Ames mutagenicity test	0.56	no units	TEST QSAR	
Developmental toxin test	0.945	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Imazaquin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,155	143	Sites	3.44	0.00102	0.0112	0.20	5.9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	14	590,358	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	51	1	Sites	1.96	0.01	0.02	0.028	0.03	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.0018	0.004	0.0184	0.047	µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,232	140	Sites	3.31	0.00093	0.02	0.26	18.2	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	12	Sites	5.48	0.0018	0.008	0.0357	0.0458	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.0018	0.005	0.0228	0.058	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	7.89	0.0128	0.0133	0.0322	0.0369	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	6	Sites	0.87	0.0015	0.00305	0.0289	0.05	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000209	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.34957	days	
Boiling point	OPERA QSAR	288.539	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	1.71E-10	mmHg	
Vapor pressure	TEST QSAR	5.35E-10	mmHg	
Solubility in water	OPERA QSAR	938272.8047	µg/L	
Solubility in water	TEST QSAR	140357.8156	µg/L	
Bioconcentration factor	OPERA QSAR	2.88632	no units	
Bioconcentration factor	TEST QSAR	3.4435	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	19.9887	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.86053	no units	
Henry's Law constant	OPERA QSAR	2.09E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Imazaquin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
293	USEPA. 2018. Imazaquin: Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Imazethapyr
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Imazethapyr
CASRN:	81335-77-5
DTXSID:	DTXSID3024287
Use:	Herbicide used on annual and perennial grass
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0000056

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	no adverse effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	15000	no effects identified	general population	OPP 2002; OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.084	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Imazethapyr

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	2.5	mg/kg/day	OPP 2002; OPP 2018	American Cyanamid Co. 1987	no effects identified	general population	0.0338	15000	[200]; [252]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). A new assessment has been published but does not impact the HRL.
Cancer Classification (CC)	NL		OPP 2002; OPP 2018						[200]; [252]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	16	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	125	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00134896	mol/kg	TEST QSAR	
Ames mutagenicity test	0.639	no units	TEST QSAR	
Developmental toxin test	0.927	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Imazethapyr
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,162	193	Sites	4.6	4.00E-05	0.0161	0.084	1.41	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	43	665,095	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.01	0.01	0.01	0.01	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.002	0.004	0.018	0.063	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,539	264	Sites	5.82	0.00032	0.0154	0.0806	2.71	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	47	Sites	21	0.001665	0.00255	0.00304	0.0082	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.002	0.004	0.0174	0.137	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	74	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	14	Sites	2.03	0.000211	0.0037	0.0249	0.07	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000331	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.52308	days	
Boiling point	OPERA QSAR	277.227	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.12E-10	mmHg	
Vapor pressure	TEST QSAR	5.12E-09	mmHg	
Solubility in water	OPERA QSAR	1407493.254	µg/L	
Solubility in water	TEST QSAR	525293.4792	µg/L	
Bioconcentration factor	OPERA QSAR	4.26593	no units	
Bioconcentration factor	TEST QSAR	2.50611	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	7.11061	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.44578	no units	
Henry's Law constant	OPERA QSAR	3E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Imazethapyr

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
200	USEPA. 2002. Health Effects Division (HED) Risk Assessment for Imazethapyr. EPA-HQ-OPP-2002-0189-0003. DP Nos. D232428 D269226 D277925. U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Washington, D.C.
294	USEPA. 2018. Imidazolinone Herbicides: Imazamox, Imazapic, and Imazethapyr. Draft Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Imidacloprid

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Imidacloprid
CASRN:	138261-41-3
DTXSID:	DTXSID5032442
Use:	Insecticide used on pests on agricultural and nursery crops
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00019

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	500	increased incidence of tremors	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0964	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Imidacloprid

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.08	mg/kg/day	OPP 2017	Ruf 1990	increased incidence of tremors	general population	0.0338	500	[282]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	NL		OPP 2017						[282]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.5	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.08	mg/kg/day	EPA HHBP	
Short-term Health-Based Guidance Value	0.002	mg/l	MN DOH	
Acute Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.002	mg/l	MN DOH	
Health-Based Screening Level	0.36	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.002	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4870	mg/kg	NIH HSDB	max
LD50	98	mg/kg	NIH HSDB	min
LOAEL	16.9	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	424	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	274	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5.7	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00121619	mol/kg	TEST QSAR	
Ames mutagenicity test	0.912	no units	TEST QSAR	
Developmental toxin test	0.805	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Imidacloprid
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			**Prevalence**					**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			**Prevalence**					**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,215	434	Sites	10	0.00066	0.0269	0.0964	5.12	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	1,409,476	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			**Prevalence**					**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	1.89	0.021	0.021	0.021	0.021	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	8	Sites	47	0.0025	0.0025	0.0106	0.099	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.0040	0.0072	0.00952	0.0101	µg/L	
Klarich et al. 2017 (Finished) [99]	2016	20	16	Sites	80	0.00122	0.00396	0.0162	0.0264	µg/L	
Ambient Water			**Prevalence**					**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,788	556	Sites	12	9.00E-04	0.028	0.177	7.94	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	18	Sites	8.2	0.0025	0.0103	0.031	0.124	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.0025	0.0025	0.0247	0.202	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	286	136	Sites	48	0.010	0.149	1.13	165	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	14	Sites	37	0.0036	0.0275	0.0696	0.143	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	14	Sites	2.03	0.0015	0.0126	0.0782	0.741	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	2	Samples	1.6				0.159	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	16	Sites	76	0.0049	0.0234	0.105	0.331	µg/L	
Waste Water Effluent			**Prevalence**					**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000166	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54366	days	
Boiling point	OPERA QSAR	322.948	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	4.36E-09	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	607872.5556	µg/L	
Solubility in water	TEST QSAR	525608.8374	µg/L	
Bioconcentration factor	OPERA QSAR	14.9739	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	114.092	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.573492	no units	
Henry's Law constant	OPERA QSAR	1.93E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Imidacloprid

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
99	Klarich, K.L., Pflug, N.C., DeWald, E.M., Hladik, M.L., Kolpin, D.W., Cwiertny, D.M. and LeFevre, G.H., 2017. Occurrence of neonicotinoid insecticides in finished drinking water and fate during drinking water treatment. Environmental Science & Technology Letters, 4(5), pp.168-173.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
282	USEPA. 2017. Imidacloprid. Acute and Chronic Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for the Registration Review Risk Assessment. EPA-HQ-OPP-2008-0844-1236. DP Nos. D438392 D438433. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Indoxacarb

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Indoxacarb
CASRN:	173584-44-6
DTXSID:	DTXSID1032690
Use:	Broad spectrum insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0034

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	5	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	decreased body weight, body-weight gain, food consumption and food efficiency; decreased hematocrit, hemoglobin and red blood cells only at 6 months.	general population	OPP 2020; OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.336	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Indoxacarb

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	OPP 2020; OPP 2018	Long et al. 1998; Frame 1997; Breslin 1997	decreased body weight, body-weight gain, food consumption and food efficiency; decreased hematocrit, hemoglobin and red blood cells only at 6 months.	general population	0.0338	100	[346]; [295]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2020) exists but does not contribute new data for HRL
Cancer Classification (CC)	NL		OPP 2020; OPP 2018						[346]; [295]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.8	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.12	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.1	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1732	mg/kg	NIH HSDB	max
LD50	268	mg/kg	NIH HSDB	min
LOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	24	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	3.78	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	51	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1.7	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	51	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00077983	mol/kg	TEST QSAR	
Ames mutagenicity test	0.589	no units	TEST QSAR	
Developmental toxin test	1.1	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Indoxacarb

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,170	10	Sites	0.46	0.00104	0.00246	0.336	0.391	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	25	74,008	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,628	4	Sites	0.25	0.00151	0.00522	0.0522	0.0729	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	166	16	Sites	9.63	0.0203	0.0588	0.15	2.01	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.92E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.69196	days	
Boiling point	OPERA QSAR	349.973	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.35E-10	mmHg	
Vapor pressure	TEST QSAR	8.99E-11	mmHg	
Solubility in water	OPERA QSAR	202.16272	µg/L	
Solubility in water	TEST QSAR	1113.7424	µg/L	
Bioconcentration factor	OPERA QSAR	4.58268	no units	
Bioconcentration factor	TEST QSAR	36.7282	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	4317.56	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.64653	no units	
Henry's Law constant	OPERA QSAR	2.16E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Indoxacarb

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
295	USEPA. 2018. Indoxacarb: Update to the Human Health Draft Risk Assessment for Indoxacarb to Support Registration Review and the Proposed New Use for Controlling Ants at Ornamental Nurseries, Sod Farms, and Livestock Corrals of non-Food Bearing Animals. EPA-HQ-OPP-2013-0367-0050. DP No. D445517. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
346	USEPA. 2020. Indoxacarb. Human Health Risk Assessment for Indoxacarb to Support the Proposed New Use on Tree Nut Group 14-12. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D453637.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Iodide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Iodide
CASRN:	20461-54-5
DTXSID:	DTXSID80912339
Use:	Anion of the element iodine that readily forms a chemical bond with another element; commonly found in iodized table salt.
Chemical Notes:	This CIS also contains some data for the following: Iodine

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
1.7

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental	10	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	subclinical hypothyroidism with thyroid gland enlargement	all infants	ATSDR 2004

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
17	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Iodide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	ATSDR 2004	Boyages et al. 1989	subclinical hypothyroidism with thyroid gland enlargement	all infants	0.143	10	[12]	Note: Chronic oral MRL derived from a critical study that measured urinary iodide in children of age of 11 years.
Reference Dose (RfD) or Equivalent			EFSA 2013						[61]	Note: Based on the available data, it was not possible to set reference values for potassium iodide (data gap identified for a valid toxicological data package).

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10000	mg/kg	NIH HSDB	min; Iodine
LD50	22000	mg/kg	NIH HSDB	max; Iodine
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	Iodine

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Iodide

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	132	105	Sites	80	1	3	17	50	µg/L	iodide

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	14	9	Sites	64	1	7	32.9	236	µg/L	iodide
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			5.9	5.9		µg/L	iodide
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,015	5,111	Sites	85	1	10	197	50,300	µg/L	iodide
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	3	1	Sites	33	484	484	484	484	µg/L	iodide

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Iodide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
12	ATSDR. 2004. Toxicological Profile for Iodine. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
61	EFSA. 2013. Conclusion on the peer review of the pesticide risk assessment of the active substance potassium iodide. Conclusion on pesticide peer review. The EFSA Journal (2013) 11(6), 2923.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Iprodione

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Iprodione
CASRN:	36734-19-7
DTXSID:	DTXSID3024154
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.15

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	6	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.674	Leydig cell tumors	general population	OPP 2020; OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0981	90th Percentile	Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Iprodione

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.061	mg/kg/day	OPP 2020; OPP 2021	MRID 42637801	increases in generalized enlargement of the cells of the zona glomerulosa in males and females, increase in fine vacuolation of the zona fasciculata and in generalized fine vacuolation of the zona reticularis in males in the adrenal cortex, reduced secretion of the seminal vesicles, and increased hemosiderosis in the spleen in females	general population	0.0338	360	[360]; [347]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Slope Factor (CSF)	0.0439	$(mg/kg/day)^{-1}$	OPP 2020; OPP 2021	Rowland 1998	Leydig cell tumors	general population	0.0338	0.674	[360]; [347]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	L		OPP 2020; OPP 2021						[360]; [347]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.000729	mg/l	Health-based screening levels from USGS	Cancer
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	Non-cancer

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3500	mg/kg	NIH HSDB	min
LD50	4000	mg/kg	NIH HSDB	max
LOAEL	12.4	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	793	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4.12	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	793	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	408	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	408	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00957194	mol/kg	TEST QSAR	
Ames mutagenicity test	0.085	no units	TEST QSAR	
Developmental toxin test	1.168	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Iprodione
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,117	26	Sites	0.83	0.010	0.025	0.0981	1.29	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	14	166,126	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	1.57	0.013	0.013	0.013	0.013	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	11	0	Sites	0						
Bradley et al. 2018 (Finished) [44]	2016	26	2	Sites	8	0.0174	0.0174	0.0174	0.0174	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,355	84	Sites	2	0.006	0.04	1.72	141	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0				0.015	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	6	0	Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	7.89	0.0246	0.0304	0.0745	0.0855	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000188	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35697	days	
Boiling point	OPERA QSAR	352.678	degree C	
Boiling point	TEST QSAR	428.894	degree C	
Vapor pressure	OPERA QSAR	3.76E-09	mmHg	
Vapor pressure	TEST QSAR	7.85E-10	mmHg	
Solubility in water	OPERA QSAR	13206.8	µg/L	
Solubility in water	TEST QSAR	22484.577	µg/L	
Bioconcentration factor	OPERA QSAR	336.935	no units	
Bioconcentration factor	TEST QSAR	15.3815	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	707.738	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.99839	no units	
Henry's Law constant	OPERA QSAR	3.12E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Iprodione

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
347	USEPA. 2020. Iprodione. Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
360	USEPA. 2021. Iprodione. Addendum to the Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Iron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Iron
CASRN:	7439-89-6
DTXSID:	DTXSID5043710
Use:	Metal, essential mineral
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.17

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	4000	minor gastrointestinal effects	general population	PPRTV 2006

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
671	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Iron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.7	mg/kg/day	PPRTV 2006	Frykman et al. 1994	minor gastrointestinal effects	general population	0.0338	4000	[214]	Note: Provisional subchronic and chronic RfD
Reference Dose (RfD) or Equivalent			EFSA 2012						[68]	Note: The EFSA NDA Panel (2004) considered that data available are insufficient to establish a tolerable upper intake level for iron.
Cancer Classification (CC)	I		PPRTV 2006						[214]	I = Inadequate evidence to determine carcinogenic potential
Reference Dose (RfD) or Equivalent			HC 1987						[77]	Note: No RfD or equivalent determined. However, the assessment stated that the asthetic objective for iron in drinking water is less than or equal to 0.3 mg/L.
Reference Dose (RfD) or Equivalent			WHO 2003						[407]	Note: "No health-based guideline value for iron is proposed."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Provisional Subchronic Provisional RfD	0.7	mg/kg/day	EPA PPRTV	
Maximum Allowable Concentration (MAC)	None	mg/l	Canadian Drinking Water Guidelines	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Iron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	742	Sites	75	9	56	671	7,423	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,288	8,506	Sites	75	2	44.1	639	220,000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	5,000,000,000 – <10,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	2	Sites	40	11.2	12.2	13	13.2	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	167	57	Sites	34	3.1	40	876	60,700	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	80		3.4		90.7	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	5		Sites			539	211,000		µg/L	
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	50,699	39,557	Sites	78	0.00305	121	2,100	47,600,000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	92		206		1,688	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	553	Sites	73	3.4	58.6	2,520	75,500	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	15	44.2	171	325	µg/L	
Waste Water Effluent			Prevalence					Magnitude			
EPA Ash Database (Wastewater)	1973 - 2014	95	91	Sites	96	10	488	3,410	72,000	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	39	Sites	98	33,700	318,000	2,028,000	1.02e+09	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	7	Sites	88	1	99	744	15,200	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	148	132	Samples	89	34.546222	9,625	174,100	626,000	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	37	Sites	95	0.069	160	13,920	1,219,440	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Iron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
68	European Food Safety Authority (EFSA). 2015. Scientific Opinion on the safety evaluation of the active substances, activated carbon, water, iron powder, kaolin calcined, sulphur and sodium chloride for use as active component in food contact materials. EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids, European Food Safety Authority (EFSA), Parma, Italy.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
77	HC. 1987. Iron. Health Canada (HC), Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
214	USEPA. 2006. Provisional Peer-Reviewed Toxicity Values for Iron and Compounds (CASRN 7439-89-6). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
407	WHO. 2003. Iron in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Isophorone

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Isophorone
CASRN:	78-59-1
DTXSID:	DTXSID8020759
Use:	Solvent mixtures for finishes, for polyvinyl and nitrocellulose resins, stoving lacquers
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
0.0019

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
2	carcinogen with linear mode of action	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	48.7	preputial gland carcinoma	general population	OPP 1999

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0955	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Isophorone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	ATSDR 2018	NTP 1986	hepatic, renal and gastrointestinal lesions	general population	0.0338	1000	[28]	Note: It is unknown which effects are most sensitive because lower doses were not examined in the study.
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	IRIS 1989	Nor-Am Agricultural Products 1972	no adverse effects at highest dose tested	general population	0.0338	1000	[164]	
Cancer Slope Factor (CSF)	0.00095	$(mg/kg/day)^{-1}$	IRIS 1989	NTP 1986	preputial gland carcinoma	general population	0.0338	31	[164]	
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OW 1992	Nor-Am Agricultural Products 1972	no adverse effects at highest dose tested	general population	0.0338	890	[186]	
Cancer Slope Factor (CSF)	0.004	$(mg/kg/day)^{-1}$	OW 1992	NTP 1986	renal tubular cell tumors and preputial gland carcinomas	general population	0.0338	7	[186]	
Reference Dose (RfD) or Equivalent	0.15	mg/kg/day	OPP 1999	Nor-Am Agricultural Products 1972	no adverse effects at highest dose tested	general population	0.0338	890	[192]	
Cancer Slope Factor (CSF)	0.000608	$(mg/kg/day)^{-1}$	OPP 1999	NTP 1986	preputial gland carcinoma	general population	0.0338	48.7	[192]	
Cancer Classification (CC)	C		IRIS 1989						[164]	C = Possible human carcinogen
Cancer Classification (CC)	C		OW 1992						[186]	C = Possible human carcinogen
Cancer Classification (CC)	C		OPP 1999						[192]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						7/1/2017	2/13/2020	25	0	2	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	15	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.034	mg/l	EPA Human Health Criteria for CWA	
Intermediate Minimal Risk Level (MRL)	3	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.04	mg/l	EPA DWSHA 2018	Cancer
Lifetime Health Advisory	0.1	mg/l	EPA DWSHA 2018	Non-cancer
Reference Concentration (RfC)	2000	$\mu g/m^3$	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans
Cancer Classification (CC)	Female.Mice NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP	SE = Some evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute LOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
Acute LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
Acute NOAEL	125	mg/kg/day	EPA Toxicity Reference Database	min
Acute NOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
LD50	1000	mg/kg	NIH HSDB	min
LD50	3200	mg/kg	NIH HSDB	max
LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	
TD50	16600	mg/kg/day	NIH CPDB	max
TD50	203	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0104954	mol/kg	TEST QSAR	
Ames mutagenicity test	0.25	no units	TEST QSAR	
Developmental toxin test	0.944	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Isophorone
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,395	69	Sites	2.88	0.0020	0.0085	0.0955	3.9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	27	12	Sites	44	0.0050	0.015	0.019	0.02	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	12	1	Sites	8.3	0.149	0.149	0.149	0.149	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	3	Sites	43	0.013	0.051	0.11	0.192	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25	1	Sites	4		0.032		0.032	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	47	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,100	973	Sites	14	0.002	0.018	0.0765	130	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25	0	Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	24	Sites	63	0.0038	0.012	0.0267	0.0991	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	18	Samples	27				0.039	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	17	Sites	81	0.013	0.049	0.0997	0.252	µg/L	
Waste Water Effluent			Prevalence					Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	14	Sites	67	0.017	0.03	0.0694	0.081	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000403	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.69868	days	
Boiling point	OPERA QSAR	216.014	degree C	
Boiling point	TEST QSAR	211.454	degree C	
Vapor pressure	OPERA QSAR	0.440752	mmHg	
Vapor pressure	TEST QSAR	0.429536	mmHg	
Solubility in water	OPERA QSAR	12271762.65	µg/L	
Solubility in water	TEST QSAR	4202800.248	µg/L	
Bioconcentration factor	OPERA QSAR	2.01286	no units	
Bioconcentration factor	TEST QSAR	8.27942	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	25.3723	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.70616	no units	
Henry's Law constant	OPERA QSAR	0.000037	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Isophorone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
28	ATSDR. 2018. Toxicological Profile for Isophorone. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
164	USEPA. 1989. Chemical Assessment Summary, Isophorone. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
186	USEPA. 1992. Isophorone Drinking Water Health Advisory. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
192	USEPA. 1999. Isophorone - Report of the Hazard Identification Assessment Review Committee. U.S. Environmental Protection Agency, Office of Prevention, Pesticides, and Toxic Substances, Office of Pesticides Programs, Health Effects Division, Washington, D.C.

lambda-Cyhalothrin
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	lambda-Cyhalothrin
CASRN:	91465-08-6
DTXSID:	DTXSID7032559
Use:	Insecticide (HSDB - data for cyhalothrin, CASRN 68085-85-8)
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0015

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	2	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	17	reduced motor activity	general population	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0262	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

lambda-Cyhalothrin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0028	mg/kg/day	OPP 2020	Moser et al. 2016	reduced motor activity	general population	0.0338	17	[348]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL; Acute PAD used- "A chronic dietary risk assessment is not being conducted because there is no apparent increase in hazard from repeated/chronic exposures to the cyhalothrin isomeric mixtures."
Cancer Classification (CC)	NL		OPP 2020						[348]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0062	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.00093	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.006	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	16	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00117761	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.114	no units	TEST QSAR	
Developmental toxin test	0.956	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

lambda-Cyhalothrin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,591	4	Sites	0.15	0.003	0.0075	0.0262	0.034	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	900018	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	7	0	Sites							
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,292	4	Sites	0.12	0.0324	0.076	0.104	0.104	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	111	0	Sites							
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	7	0	Sites							
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,268	241	Sites	19	6e-04	0.00599	0.0488	1.6136	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	8	Sites	21	9.23e-05	0.000314	0.0018	0.0022	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000201	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54485	days	
Boiling point	OPERA QSAR	422.641	degree C	
Boiling point	TEST QSAR	431.019	degree C	
Vapor pressure	OPERA QSAR	7.5E-09	mmHg	
Vapor pressure	TEST QSAR	2.05E-09	mmHg	
Solubility in water	OPERA QSAR	0.98967	µg/L	
Solubility in water	TEST QSAR	31.93935	µg/L	
Bioconcentration factor	OPERA QSAR	133.562	no units	
Bioconcentration factor	TEST QSAR	342.768	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	181452	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.7988	no units	
Henry's Law constant	OPERA QSAR	1.12E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

lambda-Cyhalothrin
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
348	USEPA. 2020. Lambda- & Gamma-Cyhalothrin: Updated Human Health Draft Risk Assessment in Support of Registration Review. DP No. D457005. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Linuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Linuron
CASRN:	330-55-2
DTXSID:	DTXSID2024163
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0046

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	46	hematological effects (increased met- and sulf-hemaglobin levels)	general population	OPP 2019; OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.21	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Linuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0077	mg/kg/day	OPP 2019; OPP 2023	MRID: 40952601	hematological effects (increased met- and sulf-hemaglobin levels)	general population	0.0338	46	[311]; [386]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2023) exists but does not contribute new data that impact the HRL.
Cancer Classification (CC)	C		OPP 2019; OPP 2023						[311]; [386]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.2	mg/kg/day	EPA HHBP	
Chronic Health-Based Guidance Value	0.001	mg/l	MN DOH	
Health-Based Screening Level	0.049	mg/l	Health-based screening levels from USGS	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4000	mg/kg	NIH HSDB	max
LD50	500	mg/kg	NIH HSDB	min
LOAEL	3.49	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	455	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.736	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	455	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00564937	mol/kg	TEST QSAR	
Ames mutagenicity test	0.605	no units	TEST QSAR	
Developmental toxin test	0.569	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Linuron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	293	0	Sites	0	ND	ND	ND		µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,733	162	Sites	2	3e-04	0.018	0.21	5.28	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	20	510517	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	4	12

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	3	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	3	Sites	18	0.0027	0.0075	0.164	0.315	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	41	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,198	192	Sites	2	3e-04	0.0435	0.2	0.94	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	2	Sites	17	0.0042	0.00835	0.0166	0.0945	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	625	46	Sites	7	0.0035	0.052	0.736	5.6	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.02	0.03	0.038	0.04	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	8	Sites	1	3e-04	0.00095	0.00163	0.0017	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000294	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53073	days	
Boiling point	OPERA QSAR	323.046	degree C	
Boiling point	TEST QSAR	304.222	degree C	
Vapor pressure	OPERA QSAR	0.00000145	mmHg	
Vapor pressure	TEST QSAR	0.000000679	mmHg	
Solubility in water	OPERA QSAR	72232.86183	µg/L	
Solubility in water	TEST QSAR	206707.5856	µg/L	
Bioconcentration factor	OPERA QSAR	17.9046	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	499.316	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.19781	no units	
Henry's Law constant	OPERA QSAR	1.12E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Linuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
311	USEPA. 2019. Linuron: Revised Human Health Draft Risk Assessment to Support Registration Review. June 11, 2019. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
386	USEPA. 2023. Linuron. Human Health Risk Assessment for a New Use on Alfalfa. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Lithium

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Lithium
CASRN:	7439-93-2
DTXSID:	DTXSID5036761
Use:	Pharmaceutical (mood stabilizer). Used as an anode in electrochemical cells and batteries; as chemical intermediate in organic syntheses
Chemical Notes:	This CIS also contains some data for the following: Lithium chloride; lithium, total.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X (lithium chloride)
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	*6.8

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	10	9

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	renal, neurologic, and endocrine gland effects	general population	PPRTV 2008

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
67.8	90th Percentile	Finished Water	UCMR 5	2023-2025

PUBLIC NOMINATION STATUS

Public Nomination
X

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.
*Disclaimer - the concentration value used for Lithium's fHQ calcuation is based on partial UCMR 5 monitoring results up through July 2025.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Lithium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	PPRTV 2008	Baldessarini and Tarazi, 2001	renal, neurologic, and endocrine gland effects	general population	0.0338	10	[227]	
Cancer Classification (CC)	I		PPRTV 2008						[227]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive, Cardiovascular, Hepatic, Neurological, Developmental, Renal, Systemic, Immune, Metabolic	15	Ahmad, 2011; Abu-Taweel 2012	Neurological	29.94	Riadh, 2011	6/1/2007	10/21/2019	5278	46	189	5

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Provisional Subchronic RfD	0.002	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1165	mg/kg	NIH HSDB	max; lithium chloride
LD50	526	mg/kg	NIH HSDB	min; lithium chloride

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Lithium
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2025	9,938	3,534	Sites	35.6	9	21	67.8	960	µg/L	Represents partial dataset (up through the July 2025 public release)
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	988	551	Sites	56	5	15	63	7929	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,778	5502	Sites	95	0.15	4.29	41.5	2420	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	2	Sites	100	2.62	3.1	3.49	3.59	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	7	7	Sites	100	0.003	3.3	5.2	16	µg/L	Lithium, total
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	26	Sites	96	0.07	4.28	23.4	388	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	23	Sites	88	0.35	1.95	13.6	71.05	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	56		10.8		42.7	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			2.7	2.7		µg/L	
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	21	10	Sites	48	0.002	2.8	9.7	40	µg/L	Lithium, total
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	20,449	17677	Sites	86	0.04516	15	100	1200000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	56		10.7		46	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	729	Sites	96	0.22	5.39	39.6	285	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.330734701	1.7	4.53	26.457361	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	7,455	7451	Samples	100	0.1	141	1700	13200000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	7,279	6126	Samples	84	1.24	5000	59350	1730000	µg/L	
Waste Water Effluent			Prevalence					Magnitude			
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	6000	66250	334000	540000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	2	2	Sites	100	50	74	139	168	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	410	398	Samples	97	1.083739	900	49650	173000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Lithium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
227	USEPA. 2008. Provisional Peer Reviewed Toxicity Values for Lithium (CASRN 7439-93-2). EPA/690/R-08/016F. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Magnesium

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Magnesium
CASRN:	7439-95-4
DTXSID:	DTXSID0049658
Use:	Metal, used in alloys commonly with aluminum
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.36

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
	non-cancer effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100000	noticeable change in taste for sensitive individuals	general population	HC 1987

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
35500	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Magnesium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			HC 1987		noticeable change in taste for sensitive individuals	general population		100000	[76]	Note: A TDI for magnesium was not derived because "There is no evidence of adverse health effects specifically attributable to magnesium in drinking water." However, HC identified a taste threshold of 100 mg/L for sensitive individuals or 500 mg/L for the average person.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	5	mg/kg/day	IOM 1997	Bashir et al., 1993	mild diarrhea and other mild gastrointestinal complaints	all infants	0.143	7000	[94]	Note: This HRL derivation assumes "that children are as susceptible to the osmotic effects of nonfood sources of magnesium as are adults."

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Magnesium

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	988	976	Sites	99	50	9948	35511	115887	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,591	11588	Sites	100	5	8910	31800	2e+06	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000,000 - 250,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	6	6	Sites	100	10	1555	6345	9390	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	621	598	Sites	96	57	14600	32000	1400000	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	542	521	Sites	96	10	3500	8500	70000	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	206	201	Sites	98	100	8000	19720	49500	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	42	42	Sites	100	8	3430	39960	101000	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		8810		31700	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	12		Sites			9950	24000		µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	5,422	5288	Sites	98	3	14000	47000	7.1e+07	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	81	81	Sites	100	400	4400	8000	55400	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	3	3	Sites	100	2600	14800	19530	19600	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	308	304	Sites	99	120	10850	25710	59500	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	141	140	Sites	99	160	23000	43700	77300	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	56,789	56607	Sites	100	2	6500	42800	8.4e+07	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		10600		44600	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	757	Sites	100	13	5840	35440	133000	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	487.9010616	2207	7410	26800	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	15,480	15480	Samples	100	10	66805	350000	6.6e+07	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	104,552	103240	Samples	99	3	380000	2595000	137110000	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
EPA Ash Database (Wastewater)	1973 - 2014	62	62	Sites	100	100	6100	15120	280000	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	80	57100	230000	325000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	7	7	Sites	100	113000	740000	2800000	6e+06	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	448	428	Samples	96	1.457172	18511	1300000	4040000	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	39	Sites	100	11.9	21950	176900	1310000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Magnesium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
76	HC. 1987. Guideline Technical Document – Magnesium. Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Ottawa, Ontario, Canada.
94	IOM. 1997. Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board. Dietary Reference Intakes for calcium, phosphorus, magnesium, vitamin D, and fluoride. National Academy Press, Institute of Medicine (IOM), Washington, DC.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Malaoxon

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Malaoxon
CASRN:	1634-78-2
DTXSID:	DTXSID9020790
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.00027

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	5	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	231	10% red blood cell acetylcholinesterase (AChE) inhibition	all infants	OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.063	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Malaoxon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.165	mg/kg/day	OPP 2023	MRID 51580301	10% red blood cell acetylcholinesterase (AChE) inhibition	all infants	0.143	231	[387]	Note: This reference dose was obtained through a drinking water steady-state PAD obtained via PBPK modeling. Model justifications: "This approach ensures that the estimated PODs are protective of both short- and long-term exposures." "The model predicts a longer time to steady state than what is observed in animal studies."
Cancer Classification (CC)			OPP 2023						[387]	Note: Malathion, the parent compound, received a cancer classification of "S". The assessment also states that "malaoxon was not found to be carcinogenic in mice."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	158	mg/kg	NIH HSDB	
LOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	141	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	141	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	5	percent	EPA Chemistry Dashboard	
TD50	296	mg/kg/day	NIH CPDB	min
TD50	3230	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000470977	mol/kg	TEST QSAR	
Ames mutagenicity test	0.333	no units	TEST QSAR	
Developmental toxin test	0.427	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Malaoxon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,711	24	Sites	0.51	0.00046	0.00258	0.063	0.204	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	2	Sites	13	0.0018	0.00839	0.0137	0.3	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,536	20	Sites	0.31	0.00024	0.015	0.129	0.182	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	1	Sites	10	0.0012	0.0012	0.0012	0.3	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	117	1	Sites	0.85	0.06	0.06	0.06	0.06	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000176	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.76021	days	
Boiling point	OPERA QSAR	335.632	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000983	mmHg	
Vapor pressure	TEST QSAR	0.0000125	mmHg	
Solubility in water	OPERA QSAR	7556191.609	µg/L	
Solubility in water	TEST QSAR	14768298.53	µg/L	
Bioconcentration factor	OPERA QSAR	1.12398	no units	
Bioconcentration factor	TEST QSAR	2.47742	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	227.413	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.72387	no units	
Henry's Law constant	OPERA QSAR	8.57E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Malaoxon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
387	USEPA. 2023. Malathion: Acute and Steady State (Food and Drinking Water) Dietary Exposure and Risk Assessments to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Malathion

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Malathion
CASRN:	121-75-5
DTXSID:	DTXSID4020791
Use:	Insecticide; veterinary medicine
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.008

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	inhibition of red blood cell acetylcholinesterase in pups	all infants	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.08	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Malathion

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2016	Fulcher 2001; Barnett 2006, 2008	inhibition of red blood cell acetylcholinesterase in pups	all infants	0.143	10	[272]	NOTE: an updated OPP HHRA is available (2023; 2024) which states that "all residues in water were assumed to be converted to malaoxon", so the updated assessment includes a food-only PAD for malathion but not a drinking water only PAD.
Cancer Classification (CC)	S		OPP 2016						[272]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.2	mg/l	EPA DWSHA 2018	
Acute inhalation Minimal Risk Level (MRL)	0.2	mg/m^3	CDC ATSDR	
Intermediate Inhalation Minimal Risk Level (MRL)	0.02	mg/m^3	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.02	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.5	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.19	mg/l	Canadian Drinking Water Guidelines	
Cancer Classification (CC)	2A	no units	WHO IARC	2A = Probably carcinogenic to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP (1977)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Mice NT	no units	HHS NTP (1979)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP (1977 and 1979)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP (1977)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NT	no units	HHS NTP (1979)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP (1977 and 1979)	N = No (negative) evidence of carcinogenicity

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	190	mg/kg	NIH HSDB	min
LD50	5843	mg/kg	NIH HSDB	max
LOAEL	29	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	3448	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3448	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	
TD50	44700	mg/kg/day	NIH CPDB	max
TD50	66.6	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00104713	mol/kg	TEST QSAR	
Ames mutagenicity test	0.383	no units	TEST QSAR	
Developmental toxin test	0.378	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Malathion

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,581	399	Sites	4	0.00041	0.013	0.08	9.58	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	26	824030	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	8	3,199

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	3	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	481	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	12	0.01	0.063	0.254	0.331	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	37	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	634	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	13,478	488	Sites	4	6e-04	0.02	0.132	25	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	3	Sites	1	0.05	0.103	0.278	0.312	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8	0.00999	0.00999	0.00999	0.0175	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,734	344	Sites	20	0.0048	0.073	0.544	57.9094	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	8	0.0166	0.0374	0.0518	0.0554	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	3	Sites	0.43	0.0011	0.0017	0.0891	0.111	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	3	Samples	2				0.04	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000239	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	125.964	days	
Boiling point	OPERA QSAR	359.966	degree C	
Boiling point	TEST QSAR	284.068	degree C	
Vapor pressure	OPERA QSAR	0.00000339	mmHg	
Vapor pressure	TEST QSAR	0.00000723	mmHg	
Solubility in water	OPERA QSAR	145159.7542	µg/L	
Solubility in water	TEST QSAR	251173.6941	µg/L	
Bioconcentration factor	OPERA QSAR	33.0695	no units	
Bioconcentration factor	TEST QSAR	9.86279	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	229.268	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.35864	no units	
Henry's Law constant	OPERA QSAR	4.88E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Malathion

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
272	USEPA. 2016. Malathion: Human Health Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2009-0317-0080. DP No. D414107. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Manganese

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Manganese
CASRN:	7439-96-5
DTXSID:	DTXSID2024169
Use:	Manufacturing of steel alloys, in dry-cell batteries, electrical coils, ceramics, matches, glass, dyes, fertilizers, welding rods, as oxidizing agents, and as animal food additives.
Chemical Notes:	This CIS also contains some data for the following: Manganese & manganese compounds; inorganic manganese compounds; manganese, total

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
0.89

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	10	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	35	adverse neurological indices, such as behavioural and sensorimotor effects, and corresponding neurostructural and neurochemical changes in exposed offspring, some of which persisted into adulthood after levels of manganese in the brain had returned to normal	all infants	WHO 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
31	90th Percentile	Finished Water	UCMR 4	2018-2020

PUBLIC NOMINATION STATUS

Public Nomination
X

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X			X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on manganese in RD 1 (2003). The EPA determined it was unlikely that regulation of manganese in drinking water would represent a meaningful opportunity for health risk reduction for persons served by public water systems – the EPA determined that the HRL concentration was far less than the average daily intake of manganese through non-water sources, which represented greater levels of manganese intake compared to those from drinking water. The determination was based on, among other data, the following:
- 3.2 % of PWSs exceeded the RD 1 HRL in NIRS monitoring
- Supplemental state data showed range of 0.9% - 10.1% PWSs with detections greater than the RD 1 HRL
- RD 1 HRL = 300 µg/L

USEPA, 2003[a]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Manganese

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	HC 2019	Kern et al., 2010, 2011; Beaudin et al., 2013	various neurological endpoints in rats. "In addition to demonstrating that exposure to manganese in early life can result in behavioural and sensorimotor effects, these studies provided mechanistic support by demonstrating corresponding neurostructural and neurochemical changes. Further, Kern et al. (2011) and Beaudin et al. (2013) demonstrated the ability of manganese exposure in early life to result in effects that persist into adulthood, after levels of manganese in the brain have returned to normal."	all infants	0.143	35	[90]	
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	IRIS 1995	NRC 1989; Freeland-Graves et al. 1987; WHO 1973	CNS effects	general population	0.0338	830	[190]	
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	OW 2004	NRC 1989; WHO 1973; Schroeder et al. 1966	NOAEL for chronic ingestion of manganese by humans	general population	0.0338	830	[207]	
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	WHO 2021	Kern, Stanwood & Smith, 2010; Kern & Smith, 2011; Beaudin, Nisam & Smith, 2013; Beaudin et al., 2017	adverse neurological indices, such as behavioural and sensorimotor effects, and corresponding neurostructural and neurochemical changes in exposed offspring, some of which persisted into adulthood after levels of manganese in the brain had returned to normal	all infants	0.143	35	[419]	
Cancer Classification (CC)	D		IRIS 1988						[190]	D = Not classifiable as to human carcinogenicity
Cancer Classification (CC)	D		OW 2004						[207]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive	0.01	Souza, 2019	Developmental	11	Foster, 2018	5/1/2018	10/25/2019	1413	13	91	3

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	1	mg/l	EPA DWSHA 2018	
Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Notification Level	0.02	mg/l	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.3	µg/m^3	CDC ATSDR	Inorganic manganese compounds
Drinking Water Guideline Value	0.08	mg/l	WHO Drinking Water Quality Guidelines	
Human Health Ambient Water Quality Criteria	0.05	mg/l	EPA Human Health Criteria for CWA	
Lifetime Health Advisory	0.3	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.12	mg/l	Canadian Drinking Water Guidelines	Manganese, total
Reference Concentration (RfC)	0.00005	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	0.09	µg/m^3	CalEPA OEHHA Chemical Database	Manganese & manganese compounds

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Manganese
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020	5,034	4527	Sites	90	0.4	2.77	31	3960	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	799	668	Sites	84	1	5.5	57	3550	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	672	Sites	68	1	12	126	1341	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,141	9415	Sites	85	0.05	19	190	59000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	49	11,774,490

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	250,000,000 - 500,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	6	2	Sites	33	0.09	0.365	0.585	0.64	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	926	562	Sites	61	0.002	28	190	93300	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	1,665	1305	Sites	78	0.38	59	475	159000	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	998	519	Sites	52	0.6	30	210	6700	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	155	53	Sites	34	0.15	16.9	534	1340	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	22	Sites	85	0.55	1.84	13.8	44.47	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	64		2.6		55.6	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			0.003	0.003		µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	5,546	2858	Sites	52	0.003	87	510	36000	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	35	29	Sites	83	0.3	6.4	42	90	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	407	362	Sites	89	0.93	182	1180	11000	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	52	45	Sites	87	0.04	70	374	1500	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,560	804	Sites	52	0.6	50	240	9150	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	145	124	Sites	86	0.516	25	140	10600	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	48,900	40654	Sites	83	0.01	40	509	1130000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	92		43		1497	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	653	Sites	86	0.15	8.06	175	3110	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.412254843	10.5	124	204.673508	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	11,514	11346	Samples	99	0.01	40	1390	792000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	4,380	3759	Samples	86	0.101	200	24840	440480	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
EPA Ash Database (Wastewater)	1973 - 2014	62	59	Sites	95	0.7	70	330	16100	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	3600	1105000	7815000	34800000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	8	Sites	100	4	1150	6348	94100	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	154	142	Samples	92	4	1150	26500	50700	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	39	Sites	100	0.131	582	4580	86800	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	14.2	µg/L	
NHANES biomonitoring detection in urine (1999-2016)	0.27	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Manganese

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
90	Health Canada. 2019. Guideline Technical Document Manganese. Health Canada (HC), Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
146	USEPA, 2001. Regulatory Determination Support Document for Manganese. EPA 815 R-01-013.
190	USEPA. 1988. Manganese; CASRN 7439-96-5. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
207	USEPA. 2004. Drinking Water Health Advisory for Manganese. EPA-822-R-04-003. U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.
419	WHO. 2021. Manganese in drinking-water. Background document for development of WHO Guidelines for drinking-water quality Geneva: World Health Organization (WHO/HEP/ECH/WSH/2021.5).
a	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Manganese. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.

MCPA

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	MCPA
CASRN:	94-74-6
DTXSID:	DTXSID4024195
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0018

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	8	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	260	Based on nephrotoxicity (increase in retraction and granular surface of the kidney associated with an increase in chronic progressive nephropathy in males).	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.467	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

MCPA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.044	mg/kg/day	OPP 2021	Kirsch, 1988 (MRID: 40634101)	Based on nephrotoxicity (increase in retraction and granular surface of the kidney associated with an increase in chronic progressive nephropathy in males).	general population	0.0338	260	[361]	
Cancer Classification (CC)	NL		OPP 2021						[361]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.1	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	
Lifetime Health Advisory	0.03	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.35	mg/l	Canadian Drinking Water Guidelines	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	439	mg/kg	NIH HSDB	min
LD50	800	mg/kg	NIH HSDB	max
LOAEL	1.02	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	120	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.2	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	97.2	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	48	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	48	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00323594	mol/kg	TEST QSAR	
Ames mutagenicity test	0.056	no units	TEST QSAR	
Developmental toxin test	0.691	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

MCPA

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,412	138	Sites	2	0.01	0.102	0.467	18.6	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	32	2582838	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	112

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.01	0.01	0.034	0.04	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.00065	0.0013	0.0086	0.24	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	61	1	Sites	2	13	13	13	13	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,531	130	Sites	2	0.01	0.06	0.33	5.36	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	7	Sites	3	0.001299	0.00245	0.0109	0.0311	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	6	Sites	50	0.00065	0.0026	0.012	0.86	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	98	35	Sites	36	0.052	0.153	0.843	13.59	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	11	0.0217	0.0426	0.0881	0.1057	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000838	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54139	days	
Boiling point	OPERA QSAR	286.714	degree C	
Boiling point	TEST QSAR	307.8	degree C	
Vapor pressure	OPERA QSAR	0.00000582	mmHg	
Vapor pressure	TEST QSAR	0.0000138	mmHg	
Solubility in water	OPERA QSAR	1910139.132	µg/L	
Solubility in water	TEST QSAR	875738.3992	µg/L	
Bioconcentration factor	OPERA QSAR	3.64045	no units	
Bioconcentration factor	TEST QSAR	2.95801	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	53.719	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.24334	no units	
Henry's Law constant	OPERA QSAR	7.04E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

MCPA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
361	USEPA. 2021. MCPA. Human Health Risk Assessment in Support of a Section 3 Registration for Use of MCPA on Clover. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D460629.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Mecoprop

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Mecoprop
CASRN:	93-65-2
DTXSID:	DTXSID9024194
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.04

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	increased kidney weights and chronic nephropathy	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
8		EDWC SW	OPP	2019

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Mecoprop

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2019	Mellert et al. 1996, 1999	increased kidney weights and chronic nephropathy	general population	0.0338	200	[312]	
Cancer Classification (CC)	S		OPP 2019						[312]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Drinking Water Guideline Value	0.01	mg/l	WHO Drinking Water Quality Guidelines	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1210	mg/kg	NIH HSDB	max
LD50	369	mg/kg	NIH HSDB	min
LOAEL	125	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	47.3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	50	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	9.3	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	26	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	9	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	26	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0039355	mol/kg	TEST QSAR	
Ames mutagenicity test	0.046	no units	TEST QSAR	
Developmental toxin test	0.691	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Mecoprop

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	16	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	4	761

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	12	6	Sites	50	0.00052	0.0012	0.00443	0.19	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	74	7	Sites	9	0.01	0.075	0.288	0.66	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	21	Sites	10	0.00052	0.0027	0.0708	0.139	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	6	Sites	50	0.00052	0.0013	0.012	0.16	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	90	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water, 30-Year Mean	2019	OPP	8	ug/L	Pesticide in Water Calculator (PWC), v1.52	The modeled surface water 30-year mean concentration provided by the most recent available EPA OPP health assessment was selected as the occurrence concentration for MCPP. This value coincides with the critical effect of chronic nephropathy provided within the health effects

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000706	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53297	days	
Boiling point	OPERA QSAR	297.982	degree C	
Boiling point	TEST QSAR	312.482	degree C	
Vapor pressure	OPERA QSAR	0.000019	mmHg	
Vapor pressure	TEST QSAR	0.0000131	mmHg	
Solubility in water	OPERA QSAR	0.00741697	mol/L	
Solubility in water	TEST QSAR	0.00348337	mol/L	
Bioconcentration factor	OPERA QSAR	3.69217	no units	
Bioconcentration factor	TEST QSAR	5.52077	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	20.0971	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.12858	no units	
Henry's Law constant	OPERA QSAR	1.65E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Mecoprop

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
312	USEPA. 2019. Mecoprop-p (MCPP-p): Acute, and Chronic Aggregate Dietary (Drinking Water Only) Exposure and Risk Assessments for the Registration Review Risk Assessment. EPA-HQ-OPP-2014-0361-0021. DP No. D452571. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Metalaxyl

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metalaxyl
CASRN:	57837-19-1
DTXSID:	DTXSID6024175
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	reproductive and developmental effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3000	dose-related increases in clinical signs of toxicity in rats (convulsions)	children	OPP 2023; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0407	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metalaxyl

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.5	mg/kg/day	OPP 2023; OPP 2020	MRIDs 00144423, 00144422 (Ciba-Geigy Corp. 1985)	dose-related increases in clinical signs of toxicity in rats (convulsions)	children	0.15	3000	[388]; [349]	Note: "There is no increase in hazard from repeat exposures to metalaxyl/mefenoxam; therefore, a chronic dietary POD was not selected. The acute endpoint is protective of potential effects from repeat dosing."; The HRL is based on the EPA's acute Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information). A new assessment has been published but does not impact the HRL.
Cancer Classification (CC)	NL		OPP 2023; OPP 2020						[388]; [349]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.5	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.474	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	669	mg/kg	NIH HSDB	min
LD50	7120	mg/kg	NIH HSDB	max
LOAEL	30.63	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	7.41	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	30.63	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	7.41	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00905733	mol/kg	TEST QSAR	
Ames mutagenicity test	0.191	no units	TEST QSAR	
Developmental toxin test	0.606	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Metalaxyl

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,568	390	Sites	7	0.00012	0.00754	0.0407	6.39	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	7	16454	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	2	Sites	4	0.01	0.02	0.107	0.132	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	25	1	Sites	4	0.01	0.01	0.01	0.01	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.002	0.0042	0.0103	0.06	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	2	Sites	8	0.0203	0.0209	0.0214	0.0215	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites							
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,461	613	Sites	6	3e-04	0.01	0.082	46.4	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	42	Sites	19	0.0042	0.0115	0.124	2.27	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.002	0.005	0.0162	0.133	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	74	0	Sites	0						
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			0.845	1.31		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	8	Sites	21	0.0085	0.0437	0.116	0.1508	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	796	18	Sites	2	3e-04	9e-04	0.243	1.06	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	20	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000279	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.28575	days	
Boiling point	OPERA QSAR	299.892	degree C	
Boiling point	TEST QSAR	344.018	degree C	
Vapor pressure	OPERA QSAR	0.00000557	mmHg	
Vapor pressure	TEST QSAR	0.00000547	mmHg	
Solubility in water	OPERA QSAR	12199720.46	µg/L	
Solubility in water	TEST QSAR	653322.2102	µg/L	
Bioconcentration factor	OPERA QSAR	8.25493	no units	
Bioconcentration factor	TEST QSAR	17.1396	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	37.2169	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.65024	no units	
Henry's Law constant	OPERA QSAR	3.92E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metalaxyl

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
349	USEPA. 2020. Mefenoxam (Metalaxyl-M). Human Health Risk Assessment for the Proposed New Use in/on Tree Nuts, Crop Group 14-12 and the Establishment of a Permanent Tolerance. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
388	USEPA. 2023. Metalaxyl, Mefenoxam (Metalaxyl-M). Human Health Risk Assessment for the Petition for Amendment of Tolerances for Residues in/on Leafy Greens Subgroup 4-16A (except Spinach), and Brassica Leafy Greens Subgroup 4-16B; Brassica Head and Stem Vegetable Crop Group 5-16; Expansions of Crop Tolerances to Stalk and Stem Vegetable Subgroup 22A and Leaf Petiole Vegetable Subgroup 22B; Fruiting Vegetables Crop Group 8-10; Succulent Shelled Pea & Bean Subgroup 6B; and Cottonseed Crop Subgroup 20C. Establishment of an Inadvertent Tolerance for Residues in/on Sugarcane. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Methane

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Methane
CASRN:	74-82-8
DTXSID:	DTXSID8025545
Use:	Fuel; flammable gas
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	9

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
3430	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Methane

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
			ECHA 2019						[55]	Note: No chronic oral Derived No Effect Level was derived because "no data available: testing technically not feasible"

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						Unlimited	8/26/2024	17,151			

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Methane

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,787	598	Sites	33	0.2	15	3430	39500	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	5,000,000,000 - 10,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	1	Sites	100	178	178	178	178	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,130	2125	Sites	51	0.1	54	10500	180000	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00135	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	18.9477	days	
Boiling point	OPERA QSAR	-161.359	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	456311	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	101244.1644	µg/L	
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3.18035	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.0888	no units	
Henry's Law constant	OPERA QSAR	0.0627508	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Methane

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
55	ECHA. 2019. Registration Dossier for Methane. European Chemicals Agency (ECHA), Helsinki, Finland. https://chem.echa.europa.eu/100.000.739/dossier-view/9043aaa0-7fef-46df-b73d-3eef36fa5007/478d528b-daf8-42b8-8b5b-e799f35b0644_478d528b-daf8-42b8-8b5b-e799f35b0644?searchText=74-82-8. Accessed 8/9/2024.

Methomyl

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Methomyl
CASRN:	16752-77-5
DTXSID:	DTXSID1022267
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.4

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	reproductive and developmental effects	1	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2.1	increases in peak red blood cell acetylcholinesterase inhibition in human	all infants	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.92	90th Percentile	Finished Water	UCM2	1993-1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Methomyl

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0015	mg/kg/day	OPP 2020	McFarlane 1998	increases in peak red blood cell acetylcholinesterase inhibition in human	all infants	0.143	2.1	[130]	Note: OPP does not derive a chronic RfD for methomyl because "repeated daily exposure does not result in an increased inhibition of AChE… only acute exposure durations are of concern…" The HRL for methomyl is based on an acute PAD.
Cancer Classification (CC)	NL		OPP 2020						[131]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.3	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.2	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	10	mg/kg	NIH HSDB	min
LD50	45	mg/kg	NIH HSDB	max
LOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	128	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	128	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	12.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000168267	mol/kg	TEST QSAR	
Ames mutagenicity test	0.871	no units	TEST QSAR	
Developmental toxin test	0.501	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Methomyl
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	12,604	9	Sites	0.07	0.1	1	2.92	3	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,542	87	Sites	1.15	0.00018	0.0053	0.19	3.55	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	33	931586	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	169	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	820	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	255	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	4	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,740	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	77	0	Sites	0						
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	1	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	422	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,392	55	Sites	0.86	0.00024	0.00849	0.125	5.6	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8	0.0122	0.0122	0.0122	0.0375	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	679	93	Sites	14	0.021	0.21	2.04	736	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0282	0.0282	0.0282	0.0282	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	4	Sites	0.58	3e-04	0.0024	0.00778	0.01	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000386	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.55	days	
Boiling point	OPERA QSAR	230.042	degree C	
Boiling point	TEST QSAR	204.528	degree C	
Vapor pressure	OPERA QSAR	0.00000545	mmHg	
Vapor pressure	TEST QSAR	0.000138357	mmHg	
Solubility in water	OPERA QSAR	56140069.95	µg/L	
Solubility in water	TEST QSAR	39271527.63	µg/L	
Bioconcentration factor	OPERA QSAR	3.54426	no units	
Bioconcentration factor	TEST QSAR	2.29615	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	20.1143	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.600496	no units	
Henry's Law constant	OPERA QSAR	1.98E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Methomyl

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
130	OPP. 2020. Methomyl and Thiodicarb: Addendum to the Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D458396
131	OPP. 2020. Methomyl/Thiodicarb (090301/114501): Acute Dietary (Food Only, Drinking Water Only, and Food Plus Drinking Water) Exposure and Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D45839
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Methyl bromide (Bromomethane)

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Methyl bromide (Bromomethane)
CASRN:	74-83-9
DTXSID:	DTXSID8020832
Use:	Broad spectrum fumigant used as an acaricide, antimicrobial, fungicide, herbicide, insecticide, nematicide, and vertebrate control agent.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.025

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	6	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	130	Decreases in body weight, body weight gain and food consumption.	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
3.23	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination for methyl bromide in RD 4 (2021). The EPA identified that methyl bromide did not appear to occur in public water systems at levels of public health concern based on, among other data, the following:
- No detections above the ½ the RD 4 HRL in UCMR 3 monitoring
- RD 4 HRL = 100 ug/L

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Methyl bromide (Bromomethane)

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.022	mg/kg/day	OPP 2018	Mertens 1997	Decreases in body weight, body weight gain and food consumption.	general population	0.0338	130	[296]	
Cancer Classification (CC)	NL		OPP 2018						[296]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.1	mg/l	EPA DWSHA 2018	
Acute Human Health Benchmark	4	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.14	mg/kg/day	EPA HHBP	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	0.01	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.001	ppm	CDC ATSDR	
Health-Based Screening Level	0.14	mg/l	Health-based screening levels from USGS	
Human Health Ambient Water Quality Criteria	0.1	mg/l	EPA Human Health Criteria for CWA	
Intermediate Inhalation Minimal Risk Level (MRL)	0.02	ppm	CDC ATSDR	
Lifetime Health Advisory	0.01	mg/l	EPA DWSHA 2018	
Subchronic Provisional RfD	0.005	mg/kg/day	EPA PPRTV	
Provisional Subchronic RfC	0.1	mg/m^3	EPA PPRTV	
Reference Concentration (RfC)	0.005	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	5	$\mu g/m^3$	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	Female.Mice NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Mice NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NT	no units	HHS NTP	NT = Not tested for carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Inhalation LOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation LOAEL	4.5	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
Inhalation NOAEL	0.15	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation NOAEL	4.5	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
LD50	214	mg/kg	NIH HSDB	
LOAEL	15.12	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	7.978	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.835	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.92	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0024322	mol/kg	TEST QSAR	
Ames mutagenicity test	0.43	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Methyl bromide (Bromomethane)
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,916	49	Sites	1.00	0.2	0.45	3.23	6.93	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	23,328	175	Sites	0.75	0.09	1.6	8.06	38.1	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	20,198	155	Sites	0.77	0.07	1	10.6	43	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,287	5	Sites	0.07	0.1	0.2	20.6	34	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	3	1,410,750	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	11	281,250

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	392	9	Sites	2.30	0.58	1.25	2.2	4.02	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	888	14	Sites	1.58	0.5	0.925	2.62	16	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	8	Sites	0.67	0.5	1.23	2.74	4.7	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,229	41	Sites	0.97	0.39	0.78	4.69	9.3	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	3	1	Sites	33.3	0.3	0.3	0.3	0.3	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	131	2	Sites	1.53	0.5	0.59	0.662	0.68	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	13	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,666	2	Sites	0.12	0.56	1.15	3.16	4	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	112	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,945	17	Sites	0.16	0.1	0.59	1.49	1200000	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	28	0	Sites	0						
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	1	Sites	0.15	0.2	0.2	0.2	0.2	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000808	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	20.7524	days	
Boiling point	OPERA QSAR	3.51921	degree C	
Boiling point	TEST QSAR	14.002	degree C	
Vapor pressure	OPERA QSAR	1601.49	mmHg	
Vapor pressure	TEST QSAR	1273.5	mmHg	
Solubility in water	OPERA QSAR	14044990.84	µg/L	
Solubility in water	TEST QSAR	30091580.62	µg/L	
Bioconcentration factor	OPERA QSAR	7.82487	no units	
Bioconcentration factor	TEST QSAR	2.25424	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	21.9145	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.19051	no units	
Henry's Law constant	OPERA QSAR	0.00739454	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Methyl bromide (Bromomethane)

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
114	Mertens, J.J.W.M. 1997. A 24-month chronic dietary study of methyl bromide in rats. WIL Research Laboratories, Inc., 1407 George Road, Ashland, OH 44805–9281, Laboratory Study No. WIL–49014, December 9, 1997, MRID 44462501
296	USEPA. 2018. Methyl Bromide. Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2013-0269-0030. DP No. D449330. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.

Methyl mercury(II) cation

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Methyl mercury(II) cation
CASRN:	22967-92-6
DTXSID:	DTXSID9024198
Use:	Fungicide and seedborne diseases, as timber preservatives, and disinfectants
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0034

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	10	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.1	Developmental neuropsychological impairment	all infants	IRIS 2001

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.00034	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Methyl mercury(II) cation

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0003	mg/kg/day	ATSDR 1999; ATSDR 2013	Davidson et al. 1998	Effects of prenatal and postnatal methylmercury exposure from fish consumption on neurodevelopment	all infants	0.143	0.4	[8]; [24]	Note: ATSDR is currently working on an updated assessment for methylmercury. The public comment draft was released in 2022.
Reference Dose (RfD) or Equivalent	0.0001	mg/kg/day	IRIS 2001	Grandjean et al. 1997; Budtz-Jørgensen et al. 1999a	Developmental neuropsychological impairment	all infants	0.143	0.1	[194]	
Reference Dose (RfD) or Equivalent	0.00019	mg/kg/day	EFSA 2012	Seychelles nutrition cohort; Faroese cohort 1	Neurodevelopmental outcomes after prenatal exposure	all infants	0.143	0.27	[59]	Note: EFSA provides a Tolerable weekly intake (TWI) of 0.0013 mg/kg. This value was divided by 7 to get tolerable daily intake (equivalent to a RfD).
Cancer Classification (CC)	C		IRIS 2001						[194]	Note: Carcinogenicity assessment last revised in 1995; C = Possible human carcinogen
			HC 1986	included in Piotrowski and Inskip 1981	irreversible neurological symptoms (in human epidemiologic studies)			1	[73]	Note: The provided value is a maximum acceptable concentration for mercury (all forms) in drinking water. An RfD equivalent was not provided.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Systemic, Neurological	0.000913	Li, 2018	Neurological, Hepatic, Renal, Systemic	4	Abdalla, 2012	3/1/2012	1/15/2020	2245	31	125	17

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	58	mg/kg	NIH HSDB	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Methyl mercury(II) cation
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	653	531	Sites	81.3	0.00004	0.0001	0.00034	2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	1	Sites	100	2.1	2.1	2.1	2.1	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,261	1012	Sites	80.3	0.00005	0.00013	0.0012	0.22	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	100	0.00005	0.00019	0.00059	0.001	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	1	1	Sites	100	0.000004	0.000004	0.000004	0.000004	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	2.23	ug/l	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Methyl mercury(II) cation
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
8	ATSDR. 1999. TOXICOLOGICAL PROFILE FOR MERCURY. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
24	ATSDR. 2013. Addendum to the Toxicological Profile for Mercury (Alkeyl and Dialkyl compounds). U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA
59	EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on the risk for public health related to the presence of mercury and methylmercury in food. EFSA Journal 2012;10(12):2985. [241 pp.] doi:10.2903/j.efsa.2012.2985. Available online: www.efsa.europa.eu/efsajournal.
73	HC. 1986. Mercury. Health Canada (HC), Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
194	USEPA. 2001. Chemical Assessment Summary Methylmercury. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.

Methyl tert-butyl ether (MTBE)
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Methyl tert-butyl ether (MTBE)
CASRN:	1634-04-4
DTXSID:	DTXSID3020833
Use:	Octane booster in gasoline; manufacture of isobutene; extraction solvent
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.058

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	5	8

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	600	decreased serum testosterone following early postnatal exposure	all infants	ATSDR 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
34.6	90th Percentile	Finished Water	UCMR 1	2001-2003

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Methyl tert-butyl ether (MTBE)

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.4	mg/kg/day	ATSDR 2023	Zhu et al. 2022	decreased serum testosterone following early postnatal exposure	all infants	0.143	600	[36]	NOTE: The RfD-equivalent is an intermediate-duration MRL based on 21 day study in young rats (PNDs 35–56); additional UFs not applied due to critical effect and study design
			WHO 2005						[413]	Note: "A health-based guideline value has not been derived for MTBE, due to the fact that any guideline value that would be derived would be significantly higher than the concentration at which it would be detected by odour."
			OW 1997	Prah et al. 1994, Young et al., 1996; Dale et al., 1997; NSTC, 1997	organoleptic effects (odor and taste)	general population		20-40	[189]	NOTE: The MTBE Health Advisory notes that keeping levels of contamination MTBE in the range of 20 to 40 ug/L or below would protect consumer acceptance of the water resource and would also provide a large margin of exposure (safety) from toxic effects.
			HC 2006						[88]	Note: Health Canada has determined that there exist too many uncertainties and limitations in the MTBE database to have confidence in a quantitative risk assessment for human health. The most suitable and sensitive parameter on which to base a drinking water guideline for MTBE is odour.
			CALEPA 1999						[45]	

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hematological, Cardiovascular	0.0055	Saeedi, 2017b	Nervous, Respiratory	1600	Dong-mei, 2009	1/1/2005	1/15/2020	909	9	10	8

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute inhalation Minimal Risk Level (MRL)	2	ppm	CDC ATSDR	
Short-term Health-Based Guidance Value	0.7	mg/l	MN DOH	
Public Health Goal (PHG)	0.013	mg/l	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Cancer Slope Factor (CSF)	0.0018	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.006	mg/l	MN DOH	Cancer
Chronic Health-Based Guidance Value	0.7	mg/l	MN DOH	Non-cancer
Chronic inhalation Minimal Risk Level (MRL)	1	ppm	CDC ATSDR	
Inhalation Unit Risk (IUR)	0.00000026	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Inhalation Minimal Risk Level (MRL)	1	ppm	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.4	mg/kg/day	CDC ATSDR	
Reference Concentration (RfC)	3	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	8000	$µg/m^3$	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.7	mg/l	MN DOH	
Maximum Allowable Concentration (MAC)	None	mg/l	Canadian Drinking Water Guidelines	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4000	mg/kg	NIH HSDB	
Percent of active toxcast in vitro	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0128233	mol/kg	TEST QSAR	
Ames mutagenicity test	0.033	no units	TEST QSAR	
Developmental toxin test	0.384	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Methyl tert-butyl ether (MTBE)

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,871	19	Sites	0.49	5	9.2	34.6	49	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,257	879	Sites	12.1	0.01	0.2	3.2	23000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	31	259,120

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	5,000,000,000 - 10,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	8	Sites	13.8	0.04	0.08	0.264	0.32	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	495	13	Sites	2.63	0.024	1.8	4.4	55	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	926	231	Sites	24.9	0.5	1.3	8.1	265	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	3	Sites	14.3	0.08	0.12	0.464	0.55	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			0.5	5		µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4,763	70	Sites	1.47	0.06	6.22	36	1900	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	5	4	Sites	80.0	0.14	0.52	1.6	3.7	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	138	46	Sites	33.3	0.5	4.2	101	880	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	24	14	Sites	58.3	0.2	6	1300	61000	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	101	1	Sites	0.99	39	73.5	101	108	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,644	1386	Sites	11.0	0.01	0.23	2.4	12400	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			1.05	5.2		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	10.5	0.01845	0.0237	0.0388	0.04319	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	55	Sites	8.03	0.01	0.06	0.765	4.47	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000942	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	3.5	pg/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.56698	days	
Boiling point	OPERA QSAR	55.2738	degree C	
Boiling point	TEST QSAR	68.237	degree C	
Vapor pressure	OPERA QSAR	251.6	mmHg	
Vapor pressure	TEST QSAR	215.278	mmHg	
Solubility in water	OPERA QSAR	50280848.15	µg/L	
Solubility in water	TEST QSAR	25598936.3	µg/L	
Bioconcentration factor	OPERA QSAR	1.52541	no units	
Bioconcentration factor	TEST QSAR	4.0738	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	18.7752	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.942109	no units	
Henry's Law constant	OPERA QSAR	0.000593561	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Methyl tert-butyl ether (MTBE)

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
36	ATSDR. 2023. Toxicological Profile for Methyl tert-Butyl Ether. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
45	CalEPA. 1999. Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Section, Sacramento, CA.
88	Health Canada. 2006. Guidelines for Canadian Drinking Water Quality: Guidline Technical Document Methyl Tertiary-Butyl Ether. Health Canada (HC), Ottawa, Ontario, Canada.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
189	USEPA. 1997. Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary-Butyl Ether (MtBE). U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, DC.
413	WHO. 2005. Methyl tertiary-Butyl Ether (MTBE) in Drinking-water Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization (WHO), Geneva, Switzerland.

Metolachlor

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metolachlor
CASRN:	51218-45-2
DTXSID:	DTXSID4022448
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0069

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	3	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	360	Based on decreased pup body weight in F1 and F2 litters.	all infants	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.47	90th Percentile	Finished Water	UCMR 2	2008-2010

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination for metolachlor in RD 4 (2021). The EPA identified that metolachlor may cause adverse health effects in humans but did not appear to occur in public water systems at levels of public health concern based on, among other data, the following:
- 0.25% of PWSs with detections in UCMR 2 monitoring; no detected concentrations greater than ½ the RD 4 HRL
- RD 4 HRL = 300 µg/L

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metolachlor

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.26	mg/kg/day	OPP 2019	Smith et al., 1981	Based on decreased pup body weight in F1 and F2 litters.	all infants	0.143	360	[313]	
Cancer Classification (CC)	L/NL		OPP 2019						[313]	L/NL = Likely to be carcinogenic but not likely carcinogenic at doses below the reference dose

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	2	mg/l	EPA DWSHA 2018	
Short-term Health-Based Guidance Value	0.3	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.3	mg/l	MN DOH	
Drinking Water Guideline Value	0.01	mg/l	WHO Drinking Water Quality Guidelines	
Lifetime Health Advisory	0.7	mg/l	EPA DWSHA 2018	
Subchronic Health-Based Guidance Value	0.3	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2200	mg/kg	NIH HSDB	min
LD50	2877	mg/kg	NIH HSDB	max
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	33	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	9.7	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	14	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	29.42	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	29.61	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	8.77	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	9.71	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00663743	mol/kg	TEST QSAR	
Ames mutagenicity test	0.421	no units	TEST QSAR	
Developmental toxin test	0.673	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Metolachlor
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	3	Sites	0.25	1.152	1.4	2.47	2.73235	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	12,953	108	Sites	0.83	0.01	0.61	2.2	13.8	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,729	2469	Sites	23.0	0.0002	0.0294	0.647	134	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	42	16102518	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	4	Sites	7.02	0.003	0.0395	0.309	0.467	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	184	2	Sites	1.09	0.06	0.095	0.179	0.2	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	822	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	822	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	3	Sites	11.1	0.002	0.0095	0.254	0.535	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	11	Sites	64.7	0.0025	0.0125	0.073	2.031	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	10	Sites	38.5	0.0025	0.0091	0.0803	0.1209	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	12		0.095		0.1	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	3		Sites			1.4	1.4		µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.005	0.0075	0.0091	0.01	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,167	11	Sites	0.51	0.059	0.19	0.28	0.28	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	77	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	998	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	17,872	4276	Sites	23.9	4e-04	0.05	0.94	376	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	115	Sites	52.5	0.002498	0.025	0.115	11.9	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	8	Sites	66.7	0.0025	0.017	0.143	2	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	114	5	Sites	4.39	0.009	0.2	0.697	0.951	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25	3	Sites	12.0		0.13		0.13	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			0.29	0.34		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	27	Sites	71.1	0.0034	0.0203	0.318	1.49	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	64	Sites	9.28	6e-04	0.00415	0.128	1.42	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.005	0.01	0.0245	0.09	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	4	Samples	3.01				0.01	µg/L	
STEWARDS/Agricultural Research Service (ARS) - USDA (Ambient)	2000 - 2015	8	8	Sites	100	0.2	0.4	1.6	61.8	µg/L	
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	144	4	Samples	2.78				0.0447	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	12	Sites	57.1	0.00355	0.02	0.0719	0.23422	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	2	Sites	9.52	0.057	0.062	0.066	0.067	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000207	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.88029	days	
Boiling point	OPERA QSAR	282.035	degree C	
Boiling point	TEST QSAR	342.591	degree C	
Vapor pressure	OPERA QSAR	0.0000311	mmHg	
Vapor pressure	TEST QSAR	0.00000764	mmHg	
Solubility in water	OPERA QSAR	518133.66	µg/L	
Solubility in water	TEST QSAR	254690.3502	µg/L	
Bioconcentration factor	OPERA QSAR	54.8956	no units	
Bioconcentration factor	TEST QSAR	30.2691	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	288.006	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.13089	no units	
Henry's Law constant	OPERA QSAR	9.01E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metolachlor

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
136	Page, J.G. (1981) Two-Generation Reproduction Study in Albino Rats with Metolachlor Technical. Toxigenics, Decatur, IL. Study Number 450-0272, August 31, 1981. MRID 00080897. Unpublished.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
313	USEPA. 2019. Metolachlor and S-Metolachlor: Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2014-0772-0030. DP No. 438094. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Metolachlor ESA

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metolachlor ESA
CASRN:	171118-09-5
DTXSID:	DTXSID1037567
Use:	Pesticide degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0016

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	8	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	1600	increased liver weight and increased serum liver enzymes	general population	MDH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
2.62	90th Percentile	Finished Water	UCMR 2	2008-2010

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metolachlor ESA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.27	mg/kg/day	MDH 2023	MRID 44931709 (Altmann 1999)	increased liver weight and increased serum liver enzymes	general population	0.0338	1600	[111]	
Reference Dose (RfD) or Equivalent	0.07	mg/kg/day	CALEPA 2017	Altmann 1999	changes in clinical chemistry data and absolute liver weight	general population	0.0338	400	[50]	Note: Acceptable Daily Dose used in place of RfD

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Subchronic Health-Based Guidance Value	7	mg/l	MN DOH	
Chronic Health-Based Guidance Value	1	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1545	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	200	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1545	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	200	mg/kg/day	EPA Toxicity Reference Database	min

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0101625	mol/kg	TEST QSAR	
Ames mutagenicity test	0.62	no units	TEST QSAR	
Developmental toxin test	1.269	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Metolachlor ESA

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	19	Sites	1.59	1	1.44	2.62	3.95455	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,108	925	Sites	29.8	0.0033	0.293	1.54	35	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6.25	0.06	0.5	0.744	1.64	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	1	Sites	50.0	0.15	0.505	1.11	1.44	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	14	Sites	82.4	0.0006	0.054	0.69	2.5	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	7	Sites	27.0	0.02	0.027	0.212	0.23	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			2.35	2.35		µg/L	
Ambient Water			Prevalence					Magnitude			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,332	1414	Sites	42.4	0.0048	0.365	2.17	39.7	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	186	Sites	84.9	0.000599	0.0528	0.87	18	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	9	Sites	75.0	0.0006	0.0735	0.716	3.603	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	4	3	Sites	75.0	0.05	0.128	0.272	0.502	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			1.55	6.01		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	22	Sites	57.9	0.02	0.125	0.416	1	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	106	Sites	18.2	0.0048	0.338	3.48	31.1	µg/L	
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000165	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.7488	days	
Boiling point	OPERA QSAR	314.45	degree C	
Boiling point	TEST QSAR	404.135	degree C	
Vapor pressure	OPERA QSAR	4.63E-08	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	2.3959422	µg/L	
Solubility in water	TEST QSAR	0.6680205	µg/L	
Bioconcentration factor	OPERA QSAR	9.61603	no units	
Bioconcentration factor	TEST QSAR	9.95405	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	400.209	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.86625	no units	
Henry's Law constant	OPERA QSAR	4.34E-10	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metolachlor ESA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
50	CalEPA. 2017. Public Health Concentration: Metolachlor and Metolachlor Degradates Ethanesulfonic Acid and Oxanilic Acid in Groundwater. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
111	MDH. 2023. Toxicological Summary for: Metolachlor ESA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit. St. Paul, MN.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Metolachlor OA

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metolachlor OA
CASRN:	152019-73-3
DTXSID:	DTXSID6037568
Use:	Pesticide degradate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0022

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	8

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	1600	changes in blood chemistry parameters without identified specific target organs	general population	MDH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
3.45	90th Percentile	Finished Water	UCMR 2	2008-2010

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metolachlor OA

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.27	mg/kg/day	MDH 2023	Syngenta 2004	changes in blood chemistry parameters without identified specific target organs	general population	0.0338	1600	[112]	
Reference Dose (RfD) or Equivalent	0.17	mg/kg/day	CALEPA 2017	Lees 2004	changes in clinical chemistry data	general population	0.0338	1000	[50]	Note: Acceptable Daily Dose used in place of RfD

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Short-term Health-Based Guidance Value	5	mg/l	MN DOH	
Chronic Health-Based Guidance Value	1	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	5	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro	0	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00946237	mol/kg	TEST QSAR	
Ames mutagenicity test	0.353	no units	TEST QSAR	
Developmental toxin test	0.732	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Metolachlor OA

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	1,198	1	Sites	0.08	2.502	3.08	3.45	3.539	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	3,109	448	Sites	14.4	0.01	0.267	1.2	19	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	16	1	Sites	6.25	0.03	0.18	0.412	0.46	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	1	Sites	50.0	0.13	0.245	0.795	0.97	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	13	Sites	76.5	0.003	0.036	0.315	4.42	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	4	Sites	15.4	0.03	0.155	0.332	0.38	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			1.77	1.77		µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,330	939	Sites	28.2	0.01	0.253	1.13	31	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	174	Sites	79.5	0.003	0.0213	0.214	4.36	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	9	Sites	75.0	0.003	0.0565	0.311	1.5	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	4	3	Sites	75.0	0.05	0.062	0.0924	0.113	µg/L	
Community Water System Survey (CWSS) (Ambient) [144]	2006	1		Sites			1.08	5.14		µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	16	Sites	42.1	0.02	0.04	0.205	0.66	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	30	Sites	5.14	0.051	0.314	1.84	17.6	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000167	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.45456	days	
Boiling point	OPERA QSAR	319.325	degree C	
Boiling point	TEST QSAR	356.287	degree C	
Vapor pressure	OPERA QSAR	4.36E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000653	mmHg	
Solubility in water	OPERA QSAR	2252766.626	µg/L	
Solubility in water	TEST QSAR	631142.9318	µg/L	
Bioconcentration factor	OPERA QSAR	2.9148	no units	
Bioconcentration factor	TEST QSAR	1.57398	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	80.3998	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.61298	no units	
Henry's Law constant	OPERA QSAR	8.29E-09	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metolachlor OA

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
50	CalEPA. 2017. Public Health Concentration: Metolachlor and Metolachlor Degradates Ethanesulfonic Acid and Oxanilic Acid in Groundwater. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Branch, Sacramento, CA.
112	MDH. 2023. Toxicological Summary for: Metolachlor OXA. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit. St. Paul, MN.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Metribuzin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metribuzin
CASRN:	21087-64-9
DTXSID:	DTXSID6024204
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.013

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	1	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	7.7	decreased body weight and body weight gains (female rats), enlarged thyroids (male rats), increased thyroid weights (male and female rats), follicular cell hyperplasia in the thyroid (male rats)	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.1	90th Percentile	Finished Water	UCM2	1993-1997

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X				

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on metribuzin in RD 1 (2003). The EPA determined the data did not suggest metribuzin occurred in drinking water at frequencies of public health concern or that regulation represented a meaningful opportunity for health risk reduction in persons served by public water systems, based on, among other data, the following:
- No detections above ½ RD 1 HRL in UCM-State Round 2 monitoring
- No detections above RD 1 HRL in additional monitoring data from midwestern states
- Reg Det 1 HRL = 91 µg/L

USEPA, 2003[a]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metribuzin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0013	mg/kg/day	OPP 2017	Christenson & Wahle, 1993	decreased body weight and body weight gains (female rats), enlarged thyroids (male rats), increased thyroid weights (male and female rats), follicular cell hyperplasia in the thyroid (male rats)	general population	0.0338	7.7	[283]	
Cancer Classification (CC)	D		OPP 2017						[283]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	5	mg/l	EPA DWSHA 2018	
Short-term Health-Based Guidance Value	0.01	mg/l	MN DOH	
Acute Health-Based Guidance Value	0.03	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.01	mg/l	MN DOH	
Lifetime Health Advisory	0.07	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	0.08	mg/l	Canadian Drinking Water Guidelines	
Subchronic Health-Based Guidance Value	0.01	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2200	mg/kg	NIH HSDB	max
LD50	250	mg/kg	NIH HSDB	min
LOAEL	1.6	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	567	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	567	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	3	mg/kg/day	EPA Toxicity Reference Database	
Subchronic NOAEL	1.25	mg/kg/day	EPA Toxicity Reference Database	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00426579	mol/kg	TEST QSAR	
Ames mutagenicity test	0.63	no units	TEST QSAR	
Developmental toxin test	0.056	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Metribuzin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	13,512	1	Sites	0.01	0.1	0.1	0.1	0.1	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,707	555	Sites	5.18	0.0014	0.025	0.23	34.1	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	4,955,624	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	5	27,646

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	1	Sites	1.75	0.016	0.016	0.016	0.016	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	182	0	Sites	0						
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	822	1	Sites	0.12	0.1	0.1	0.1	0.1	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	822	1	Sites	0.12	0.05	0.085	0.223	0.28	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	3	Sites	20.0	0.0107	0.257	1.63	3.76	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,171	0	Sites	0						
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	78	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	997	0	Sites	0						
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	92	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	15,229	902	Sites	6	0.001	0.027	0.2	423	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	9	3	Sites	33.3	0.0107	0.106	2.4	29.742	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	224	9	Sites	4.02	0.016	0.145	0.256	0.4	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	7.89	0.0159	0.0184	0.436	0.541	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	4	Sites	0.58	0.0038	0.292	0.628	0.651	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
STEWARDS/Agricultural Research Service (ARS) - USDA (Ambient)	2000 - 2015	8	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000236	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.75993	days	
Boiling point	OPERA QSAR	300.037	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000000439	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	1114224.427	µg/L	
Solubility in water	TEST QSAR	1823903.62	µg/L	
Bioconcentration factor	OPERA QSAR	3.32533	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	51.3347	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.70002	no units	
Henry's Law constant	OPERA QSAR	1.22E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metribuzin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
51	Christenson, W.R. and B.S. Wahle. 1993. Technical Grade Metribuzin (Sencor®): A Combined Chronic Toxicity/Oncogenicity Feeding Toxicity Study in the Rat. Unpublished report to EPA by Miles Inc. MRID 42672501.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
283	USEPA. 2017. Metribuzin: Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2012-0487-0022. DP No. D432005. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.
a	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Metribuzin. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.

Metsulfuron-methyl
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Metsulfuron-methyl
CASRN:	74223-64-6
DTXSID:	DTXSID6023864
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0004

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	8	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1500	Decreases in body weight and body weight gain.	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.6	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Metsulfuron-methyl

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.25	mg/kg/day	OPP 2015	MRID: 00154477 (1985)	Decreases in body weight and body weight gain.	general population	0.0338	1500	[257]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	NL		OPP 2015						[257]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	1.6	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	40	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	700	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	700	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.274	no units	TEST QSAR	
Developmental toxin test	1.048	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Metsulfuron-methyl
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,307	32	Sites	1.39	0.01	0.15	0.6	2.5	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	52	2	Sites	3.85	0.06	0.06	0.06	0.06	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	2	Sites	13.3	0.0025	0.0025	0.00352	0.014	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,959	34	Sites	1.15	0.01	0.17	1.25	39.1	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	5	Sites	2.28	0.002498	0.0096	0.04	0.058	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	5	Sites	50.0	0.0025	0.0025	0.00648	0.014	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	2	Samples	1.59				0.62	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000103	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.27083	days	
Boiling point	OPERA QSAR	264.676	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	3.25E-11	mmHg	
Vapor pressure	TEST QSAR	1.12E-11	mmHg	
Solubility in water	OPERA QSAR	5077121.952	µg/L	
Solubility in water	TEST QSAR	215940.905	µg/L	
Bioconcentration factor	OPERA QSAR	1.55775	no units	
Bioconcentration factor	TEST QSAR	0.532108	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	34.7033	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.19896	no units	
Henry's Law constant	OPERA QSAR	8.89E-12	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Metsulfuron-methyl

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
257	USEPA. 2015. Metsulfuron-methyl. Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D427414.

Mirex

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Mirex
CASRN:	2385-85-5
DTXSID:	DTXSID7020895
Use:	Insecticide
Chemical Notes:	Canceled pesticide. Last end of use date: 10/10/1989.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0013

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	non-cancer effects	5	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1	Liver cytomegaly, fatty metamorphosis, angiectasis; thyroid cystic follicles	general population	IRIS 1992

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0013	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Mirex

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0003	mg/kg/day	ATSDR 2020	NTP 1990	histopathologic liver lesions	general population	0.0338	2	[31]	
Reference Dose (RfD) or Equivalent	0.0002	mg/kg/day	IRIS 1992	NTP 1990	Liver cytomegaly, fatty metamorphosis, angiectasis; thyroid cystic follicles	general population	0.0338	1	[182]	Note: No carcinogenicity assessment performed in this IRIS assessment.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Slope Factor (CSF)	18	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Inhalation Unit Risk (IUR)	0.0051	$(\mu g/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to
Cancer Classification (CC)	Male.Mice NT	no units	HHS NTP	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Mice NT	no units	HHS NTP	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1000	mg/kg	NIH HSDB	max
LD50	125	mg/kg	NIH HSDB	min
LOAEL	1.95	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	7.7	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	7.7	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	6	percent	EPA Chemistry Dashboard	
TD50	0.618	mg/kg/day	NIH CPDB	min
TD50	22.4	mg/kg/day	NIH CPDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000362243	mol/kg	TEST QSAR	
Ames mutagenicity test	0.53	no units	TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Mirex

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	184	1	Sites	0.54	0.0013	0.0013	0.0013	0.0013	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	2	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,527	7	Sites	0.46	0.001	0.0282	0.05	0.05	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	4	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		3.17E-15	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)	8.4	ng/g	
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	830.283	days	
Boiling point	OPERA QSAR	377.265	degree C	
Boiling point	TEST QSAR	358.388	degree C	
Vapor pressure	OPERA QSAR	0.000000792	mmHg	
Vapor pressure	TEST QSAR	0.000000482	mmHg	
Solubility in water	OPERA QSAR	84.55405	µg/L	
Solubility in water	TEST QSAR	106.37445	µg/L	
Bioconcentration factor	OPERA QSAR	20380	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	998351	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	6.88879	no units	
Henry's Law constant	OPERA QSAR	0.000811514	atm-m^3/mol	

Mirex

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
31	ATSDR. 2020. Toxicological Profile for Mirex and Chlordecone. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
182	USEPA. 1992. Chemical Assessment Summary, Mirex; CASRN 2385-85-5. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Myclobutanil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Myclobutanil
CASRN:	88671-89-0
DTXSID:	DTXSID8024315
Use:	Fungicide used on fruit
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00022

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	150	Testicular atrophy, decreased testicular weight.	general population	OPP 2021; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.033	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Myclobutanil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	OPP 2021; OPP 2019	MRIDs: 00149582; 00165247	Testicular atrophy, decreased testicular weight.	general population	0.0338	150	[362]; [314]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	E		OPP 2021; OPP 2019						[362]; [314]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	20	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.6	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.16	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1600	mg/kg	NIH HSDB	min
LD50	2290	mg/kg	NIH HSDB	max
LOAEL	393.5	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	9.84	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2.49	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	393.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1500	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	0.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1500	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00576766	mol/kg	TEST QSAR	
Ames mutagenicity test	0.709	no units	TEST QSAR	
Developmental toxin test	0.554	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

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CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,763	171	Sites	3.59	0.00033	0.00912	0.033	24	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	33	71,933	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	52

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	11.8	0.0027	0.0188	0.0188	0.05	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,862	203	Sites	2.96	0.00054	0.0119	0.0982	4.86	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	2	Sites	0.91	0.004828	0.0439	0.0752	0.083	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	4	Sites	33.3	0.0027	0.0188	0.083	0.083	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	6	2	Sites	33.3	0.0212	0.0234	0.0253	0.0257	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5.26	0.0497	0.161	0.251	0.273	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	3	Sites	0.43	0.0061	0.0098	0.0116	0.012	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000389	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.35398	days	
Boiling point	OPERA QSAR	339.227	degree C	
Boiling point	TEST QSAR	396.923	degree C	
Vapor pressure	OPERA QSAR	0.000000196	mmHg	
Vapor pressure	TEST QSAR	0.000000126	mmHg	
Solubility in water	OPERA QSAR	138899.4259	µg/L	
Solubility in water	TEST QSAR	11060.274	µg/L	
Bioconcentration factor	OPERA QSAR	33.7376	no units	
Bioconcentration factor	TEST QSAR	103.514	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	501.959	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.9395	no units	
Henry's Law constant	OPERA QSAR	0.000000318	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Myclobutanil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
314	USEPA. 2019. Myclobutanil: Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2015-0053-0018. DP No. D448816. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
362	USEPA. 2021. Myclobutanil: Addendum to the Human Health Risk Assessment for Registration Review (D448816). U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D462439.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Naphthalene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Naphthalene
CASRN:	91-20-3
DTXSID:	DTXSID8020913
Use:	Former pesticide; chemical intermediate; moth repellant
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.012

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	7	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	600	Based on significant body weight/body weight gain decrement and renal effects (minimal cortical focal lymphocytic infiltrate; focal tubular regeneration).	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
7.4	90th Percentile	Finished Water	UCM1	1988 - 1992

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X				

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination on naphthalene in RD 1 (2003). The EPA evaluated that it was unlikely that naphthalene would occur in drinking water at frequencies or concentrations of public health concern, and thus naphthalene regulation in drinking water did not represent a meaningful opportunity for health risk reduction in persons served by public water systems, based on, among other data, the following:

- No detections greater than the RD 1 HRL in UCM-State Round 2 monitoring; an estimated 0.002% of population exposed to concentrations greater than ½ RD 1 HRL
- RD 1 HRL = 140 µg/L

USEPA, 2003[a]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Naphthalene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	OPP 2018	NTP 1980	Based on significant body weight/body weight gain decrement and renal effects (minimal cortical focal lymphocytic infiltrate; focal tubular regeneration).	general population	0.0338	600	[297]	
Cancer Classification (CC)			OPP 2018						[297]	Note: The carcinogenic potential of naphthalene is currently undergoing review by EPA National Center for Environmental Assessment (NCEA; Integrated Risk Information System (IRIS))

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.5	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.6	mg/kg/day	CDC ATSDR	
Acute and Short-term Health-Based Guidance Values	0.07	mg/l	MN DOH	
Notification Level	0.17	mg/l	CalEPA OEHHA Chemical Database	
Cancer Slope Factor (CSF)	0.12	$(mg/kg/day)^{-1}$	CalEPA OEHHA Chemical Database	
Chronic Health-Based Guidance Value	0.07	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.0007	ppm	CDC ATSDR	
Inhalation Unit Risk (IUR)	0.000034	$(µg/m^3)^{-1}$	CalEPA OEHHA Chemical Database	
Intermediate Minimal Risk Level (MRL)	0.6	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.1	mg/l	EPA DWSHA 2018	
Reference Concentration (RfC)	0.003	mg/m^3	EPA IRIS	
Reference Concentration (RfC)	9	$µg/m^3$	CalEPA OEHHA Chemical Database	
Subchronic Health-Based Guidance Value	0.07	mg/l	MN DOH	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to
Cancer Classification (CC)	Female.Mice NT	no units	HHS NTP (2000)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Mice SE	no units	HHS NTP (1991)	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NT	no units	HHS NTP (1991)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP (2000)	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NE	no units	HHS NTP (1991)	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NT	no units	HHS NTP (2000)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Rats NT	no units	HHS NTP (1991)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP (2000)	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Inhalation LOAEL	20.1	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
Inhalation LOAEL	3.6	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
Inhalation NOAEL	20.1	mg/kg/day	EPA Toxicity Reference Database	max; units converted to mg/kg/day by database developers
Inhalation NOAEL	3.6	mg/kg/day	EPA Toxicity Reference Database	min; units converted to mg/kg/day by database developers
LD50	2600	mg/kg	NIH HSDB	max
LD50	490	mg/kg	NIH HSDB	min
LOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	450	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0109648	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.01	no units	TEST QSAR	
Developmental toxin test	0.32	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Naphthalene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997	22,923	173	Sites	0.75	0.07	0.73	3.08	90	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992	13,452	159	Sites	1.18	0.03	1	7.4	906	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,372	68	Sites	0.92	0.008	0.11	0.707	70	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	49	3,978,411

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	100,000,000 - 250,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	58	1	Sites	1.72	0.056	0.056	0.056	0.056	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	366	3	Sites	0.82	0.003	0.0105	0.93	7	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	887	14	Sites	1.58	0.5	1.3	2.03	3.1	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1,188	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	26	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	3,888	21	Sites	0.54	0.001	0.565	3.21	5.8	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	131	5	Sites	3.82	0.5	1.2	2.58	4.5	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	15	1	Sites	6.67	1.08	1.16	1.23	1.25	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,665	2	Sites	0.12	0.66	34.4	35.8	36	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	101	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	13,161	701	Sites	5.33	0.003	0.04	0.8	19000	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	7.89	0.0162	0.025	0.0277	0.0284	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	685	1	Sites	0.15	0.78	0.78	0.78	0.78	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	20	14	Sites	70.0	0.026	0.053	0.187	0.821	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	2	Sites	9.52	0.021	0.025	0.0282	0.029	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00102	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.02366	days	
Boiling point	OPERA QSAR	217.91	degree C	
Boiling point	TEST QSAR	233.31	degree C	
Vapor pressure	OPERA QSAR	0.0842218	mmHg	
Vapor pressure	TEST QSAR	0.057544	mmHg	
Solubility in water	OPERA QSAR	31425.82949	µg/L	
Solubility in water	TEST QSAR	39609.61122	µg/L	
Bioconcentration factor	OPERA QSAR	85.1911	no units	
Bioconcentration factor	TEST QSAR	244.67	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	913.843	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.29634	no units	
Henry's Law constant	OPERA QSAR	0.000439338	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Naphthalene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
39	Batelle Columbus Laboratories (BCL). 1980. Unpublished subchronic toxicity study: naphthalene (C52904) Fisher 344 rats. Report to the US Department of Health and Human Services, National Toxicology Program, Research Triangle Park, NC, by BCL, Columbus, OH, under Subcontract No. 76-34-106002.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
148	USEPA, 2001. Regulatory Determination Support Document for Naphthalene. EPA 815 R-01-008.
297	USEPA. 2018. Naphthalene: Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2016-0113-0018. DP No. D440842. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
a	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Naphthalene. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.

Nicosulfuron

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Nicosulfuron
CASRN:	111991-09-4
DTXSID:	DTXSID6034764
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0000081

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	non-cancer effects	8	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	7400	Decreased body weight gain in males; Increased in relative liver and kidney weights in males.	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.06	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Nicosulfuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	1.25	mg/kg/day	OPP 2015	MRID: 41360102	Decreased body weight gain in males; Increased in relative liver and kidney weights in males.	general population	0.0338	7400	[258]	The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	NL		OPP 2015						[258]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	8	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2000	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00864968	mol/kg	TEST QSAR	
Ames mutagenicity test	0.319	no units	TEST QSAR	
Developmental toxin test	0.957	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Nicosulfuron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,174	93	Sites	2.23	7e-04	0.00461	0.06	1.09	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	41	252,434	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	3	Sites	20.0	0.0028	0.008	0.0287	0.04	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,247	87	Sites	2.05	0.00071	0.00413	0.052	0.64	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	1	Sites	0.46	0.013	0.013	0.013	0.013	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	5	Sites	50.0	0.0028	0.008	0.028	0.08	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	7	Sites	1.01	0.0014	0.0028	0.0047	0.0056	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	7	Samples	5.56				0.13	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.57E-09	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	ug/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.26433	days	
Boiling point	OPERA QSAR	281.22	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	1.07E-10	mmHg	
Vapor pressure	TEST QSAR	1.37E-11	mmHg	
Solubility in water	OPERA QSAR	9386405.028	µg/L	
Solubility in water	TEST QSAR	402919.1967	µg/L	
Bioconcentration factor	OPERA QSAR	1.57772	no units	
Bioconcentration factor	TEST QSAR	0.381066	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	30.2442	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.0122087	no units	
Henry's Law constant	OPERA QSAR	5.43E-11	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Nicosulfuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
258	USEPA. 2015. Nicosulfuron. Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D427029.

Nicotine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Nicotine
CASRN:	54-11-5
DTXSID:	DTXSID1020930
Use:	Restricted use pesticide; component in cigarettes
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.1

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
8	reproductive and developmental effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	0.14	lowest therapeutic dose: smoking cessation/reduces withdrawal symptoms, including nicotine craving associated with quitting smoking	all infants	NIH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.151	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Nicotine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.000025	mg/kg/day	NIH 2023	Wal-Mart Stores, 2020	lowest therapeutic dose: smoking cessation/reduces withdrawal symptoms, including nicotine craving associated with quitting smoking	general population	0.0338	0.59	[121]	NOTE: The CCL Screening Level is based on the EPA's Human Health Benchmarks for Pharmaceuticals (HHB-Rx) in Drinking Water (see https://www.epa.gov/sdwa/human-health-benchmarks for more information). HHB-Rxs use a lowest therapeutic dose/3000x UF in place of an RfD; lowest therapeutic doses were obtained from FDA-approved labels.
Reference Dose (RfD) or Equivalent	0.000025	mg/kg/day	NIH 2023	Wal-Mart Stores, 2020	lowest therapeutic dose: smoking cessation/reduces withdrawal symptoms, including nicotine craving associated with quitting smoking	all infants	0.143	0.14	[121]	NOTE: The CCL Screening Level is based on the EPA's Human Health Benchmarks for Pharmaceuticals (HHB-Rx) in Drinking Water (see https://www.epa.gov/sdwa/human-health-benchmarks for more information). HHB-Rxs use a lowest therapeutic dose/3000x UF in place of an RfD; lowest therapeutic doses were obtained from FDA-approved labels.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	188	mg/kg	NIH HSDB	max
LD50	24	mg/kg	NIH HSDB	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00530884	mol/kg	TEST QSAR	
Ames mutagenicity test	0.047	no units	TEST QSAR	
Developmental toxin test	0.645	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Nicotine

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,247	178	Sites	14.3	0.00314	0.0285	0.151	1.71	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	11.5	0.0226154	0.0229	0.0795	0.0935951	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
IL EPA (2008) via Uslu et al. (2013) (Finished) [400]	2008	NA							0.011	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,077	278	Sites	25.8	0.00297	0.0394	0.198	14.6	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	11	Sites	28.9	0.0034862	0.0586	0.272	0.3776463	µg/L	
IL EPA (2008) via Uslu et al. (2013) (Ambient) [400]	2008	NA							0.059	µg/L	
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	30	1	Samples	3.33				0.0651	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.0286	0.776	5.84	18.3	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	5	Sites	23.8	0.0346125	0.0664	0.103	0.1070941	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000407	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.36233	days	
Boiling point	OPERA QSAR	247.052	degree C	
Boiling point	TEST QSAR	244.899	degree C	
Vapor pressure	OPERA QSAR	0.0375479	mmHg	
Vapor pressure	TEST QSAR	0.02208	mmHg	
Solubility in water	OPERA QSAR	998296513	µg/L	
Solubility in water	TEST QSAR	12976186.88	µg/L	
Bioconcentration factor	OPERA QSAR	5.20978	no units	
Bioconcentration factor	TEST QSAR	11.995	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	102.389	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.17111	no units	
Henry's Law constant	OPERA QSAR	0.0000276	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Nicotine

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
121	NIH. 2023. DailyMed Database. U.S. National Library of Medicine, National Institutes of Health (NIH). https://dailymed.nlm.nih.gov/dailymed/.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
400	Uslu, M., Jasim, S., Arvai, A., Bewtra, J. and Biswas, N., 2013. A Survey of Occurrence and Risk Assessment of Pharmaceutical Substances in the Great Lakes Basin. Ozone: Science & Engineering, 35(4), pp.249-262.

Nitrobenzene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Nitrobenzene
CASRN:	98-95-3
DTXSID:	DTXSID3020964
Use:	Solvent
Chemical Notes:	Canceled pesticide. Last end of use date: 12/19/1988.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	9.2

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	1	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	increased methemoglobin in male F344 rats	general population	IRIS 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
92.2	90th Percentile	Finished	UCMR 1	2001-2003

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination for nitrobenzene in RD 4 (2021). The EPA identified that nitrobenzene did not present a meaningful opportunity for health risk reduction, based on, among other data, the following:
- An estimated 0.1% of the population served by PWSs were exposed above the RD 4 HRL in UCMR 1 monitoring
- RD 4 HRL = 10 ug/L

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Nitrobenzene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.002	mg/kg/day	IRIS 2009	NTP 1983	increased methemoglobin in male F344 rats	general population	0.0338	10	[231]	
Reference Dose (RfD) or Equivalent	0.0013	mg/kg/day	WHO 2009	Cattley et al. 1994; Holder 1998	pigmentation of nose epithelium	general population	0.0338	7.7	[416]	Note: WHO derived an oral toxicity value using dose metric conversion from an inhalation study. Uncertainity with the use of the critical studies for long-term health-based values should be noted: "It should be emphasized that the derivation of long-term health-based values includes large uncertainties because of the dose metric conversion from inhalation studies and the possibility of increased metabolism to aniline in the gastrointestinal tract."
Cancer Slope Factor (CSF)	0.037	$(mg/kg/day)^{-1}$	WHO 2009	Cattley et al. 1994; Holder 1998	combined tumor incidences for liver, thyroid, and kidney in male rats	general population	0.0338	0.8	[416]	Note: WHO derived an oral toxicity value using dose metric conversion from an inhalation study. Uncertainity with the use of the critical studies for long-term health-based values should be noted: "It should be emphasized that the derivation of long-term health-based values includes large uncertainties because of the dose metric conversion from inhalation studies and the possibility of increased metabolism to aniline in the gastrointestinal tract."
			ATSDR 2024						[38]	Note: ATSDR determined an intermediate oral MRL based off a BMDL1SD from a study of 90 days of exposure (same critical study as that used by the 2009 IRIS assessment) with an uncertainty factor of 100x applied. ATSDR did not determine a chronic RfD or equivalent by its standards.
Cancer Classification (CC)	L		IRIS 2009						[231]	Note: Likely to be carcinogenic by any route of exposure but only an inhalation cancer value was derived.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						1/1/2023	1/16/2025	124	0	3	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	0.05	mg/kg/day	CDC ATSDR	
Acute inhalation Minimal Risk Level (MRL)	0.04	ppm	CDC ATSDR	
Chronic inhalation Minimal Risk Level (MRL)	0.001	mg/l	CDC ATSDR	
Human Health Ambient Water Quality Criteria	0.01	mg/l	EPA Human Health Criteria for CWA	
Inhalation Unit Risk (IUR)	0.00004	$(\mu g/m^3)^{-1}$	EPA IRIS	
Intermediate Inhalation Minimal Risk Level (MRL)	0.003	mg/l	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.02	mg/kg/day	CDC ATSDR	
Reference Concentration (RfC)	0.009	mg/m^3	EPA IRIS	
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	590	mg/kg	NIH HSDB	min
LD50	600	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00304089	mol/kg	TEST QSAR	
Ames mutagenicity test	0.374	no units	TEST QSAR	
Developmental toxin test	0.259	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Nitrobenzene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,861	2	Sites	0.05	21.6	60.8	92.2	100	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,926	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	13	299,719

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	23	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	188	2	Sites	1.06	2	3.5	4.7	5	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,313	42	Sites	0.97	0.02	76.6	96.7	240	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000039	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)	<LOD	ng/ml	
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.25296	days	
Boiling point	OPERA QSAR	210.848	degree C	
Boiling point	TEST QSAR	214.612	degree C	
Vapor pressure	OPERA QSAR	0.243908	mmHg	
Vapor pressure	TEST QSAR	0.171791	mmHg	
Solubility in water	OPERA QSAR	2.0061267	µg/L	
Solubility in water	TEST QSAR	1.521578	µg/L	
Bioconcentration factor	OPERA QSAR	4.69009	no units	
Bioconcentration factor	TEST QSAR	10.5196	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	87.1716	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.85116	no units	
Henry's Law constant	OPERA QSAR	0.0000238	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Nitrobenzene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
38	ATSDR. 2024. Toxicological Profile for Nitrobenzene. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
118	National Toxicology Program (NTP). 1983. Report on the subchronic toxicity via gavage of nitrobenzene (C60082) in Fischer 344 rats and B6C3F1 mice [unpublished]. National Toxicology Program, prepared by the EG&G Mason Research Institute, Worcester, MA, for the National Toxicology Program, National Institute of Environmental Health Services, Public Health Service, U.S. Department of Health and Human Services, Research Triangle Park, NC; MRI–NTP 08–83–19.
231	USEPA. 2009. Chemical Assessment Summary, Nitrobenzene. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
236	USEPA. 2009. Toxicological Review of Nitrobenzene (CAS No. 98–95–3) in Support of Summary Information on the Integrated Risk Information System (IRIS). National Center for Environmental Assessment, Washington, DC. EPA 635–R–08–004F.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.
416	WHO. 2009. Nitrobenzene in Drinking-water: Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Nitroglycerin

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Nitroglycerin
CASRN:	55-63-0
DTXSID:	DTXSID1021407
Use:	Used in the production of dynamite and other explosives, rocket fuel, personal care products, and pharmaceuticals
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.15

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	non-cancer effects	9	8

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.6	acute adverse effects related to vasodilation	general population	PPRTV 2006

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.087	90th Percentile	All Ambient Water	NWIS	2008 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Nitroglycerin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0001	mg/kg/day	PPRTV 2006	Katzung and Chatterjee 2001; Kerins et al. 2001	acute adverse effects related to vasodilation	general population	0.0338	0.6	[215]	Low-to-medium confidence in the reference dose, in part because the LOAEL used was not based on dose-response data but rather based on the lowest prescribed oral dose used for the therapeutic control of angina pectoris in patients.
Cancer Slope Factor (CSF)	0.017	$(mg/kg/day)^{-1}$	PPRTV 2006	Ellis et al. 1984	hepatocellular adenomas and carcinomas in male and female rats, male data used	general population	0.0338	1.7	[215]	
Cancer Classification (CC)	L		PPRTV 2006						[215]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.005	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.002	mg/l	EPA DWSHA 2018	Cancer
Lifetime Health Advisory	0.005	mg/l	EPA DWSHA 2018	Non-cancer
Subchronic Provisional RfD	0.0001	mg/kg/day	EPA PPRTV	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1188	mg/kg	NIH HSDB	max
LD50	822	mg/kg	NIH HSDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00457088	mol/kg	TEST QSAR	
Ames mutagenicity test	0.664	no units	TEST QSAR	
Developmental toxin test	0.627	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Nitroglycerin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	19	497,281

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	42	3	Sites	7.14	0.048	0.087	0.087	0.087	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000176	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.45739	days	
Boiling point	OPERA QSAR	249.971	degree C	
Boiling point	TEST QSAR	223.94	degree C	
Vapor pressure	OPERA QSAR	0.00040034	mmHg	
Vapor pressure	TEST QSAR	0.000207014	mmHg	
Solubility in water	OPERA QSAR	1.3728378	µg/L	
Solubility in water	TEST QSAR	1.3157963	µg/L	
Bioconcentration factor	OPERA QSAR	8.55708	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	299.204	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.61885	no units	
Henry's Law constant	OPERA QSAR	0.00000177	atm-m^3/mol	

Nitroglycerin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
215	USEPA. 2006. Provisional Peer-Reviewed Toxicity Values for Nitroglycerin (CASRN 55-63-0). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

n-Nonylphenol

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	n-Nonylphenol
CASRN:	25154-52-3
DTXSID:	DTXSID3021857
Use:	In the preparation of lubricating oil additives, resins, plasticizers, surface active agents; antioxidants for plastics and rubber
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
0.10

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	29	renal mineralization in male rats	general population	MDH 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
3	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
			X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

n-Nonylphenol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0049	mg/kg/day	MDH 2023	NTP 1997; Chapin 1999	renal mineralization in male rats	general population	0.0338	29	[113]	

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Metabolic, Systemic	0.00002	Yu, 2018	Endocrine	456	Masutomi, 2004	Not date limited	1/28/2020	2685	64	16	50

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.04	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1600	mg/kg	NIH HSDB	min
LD50	1620	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	32	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0116681	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.104	no units	TEST QSAR	
Developmental toxin test	0.533	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

n-Nonylphenol

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	528	50	Sites	9.47	0.1	1	3	9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	33	580,840

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<25,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	24	2	Sites	8.33	1	2	3	3	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	3	Sites	42.9	0.2	1	2.6	3	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	8	Samples	100	1.24e-05 ± 5.3e-06	1.95e-05		6.06e-05 ± 1.92e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,134	419	Sites	13.4	0.1	0.5	2	61.2	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	10	Sites	26.3	0.105	0.278	0.448	0.461	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	8	Samples	100	5.34e-05 ± 5.8e-06	8.32e-05		0.0001856 ± 2e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	0	Samples	0						
Maruya et al. 2016 (Ambient) [104]	2013	9	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	13	Sites	61.9	0.27	1	3.42	4.35	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	7	1	Sites	14.3				0.02	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	17	Sites	81.0	1.1	1.1	1.1	1.1	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000105	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.73484	days	
Boiling point	OPERA QSAR	269.164	degree C	
Boiling point	TEST QSAR	316.679	degree C	
Vapor pressure	OPERA QSAR	0.000820504	mmHg	
Vapor pressure	TEST QSAR	0.000034	mmHg	
Solubility in water	OPERA QSAR	6676.7868	µg/L	
Solubility in water	TEST QSAR	1267.047	µg/L	
Bioconcentration factor	OPERA QSAR	380.792	no units	
Bioconcentration factor	TEST QSAR	96.8278	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	6913.46	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.75732	no units	
Henry's Law constant	OPERA QSAR	0.0000106	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

n-Nonylphenol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
113	MDH. 2023. Toxicological Summary for: p-Nonylphenol, branched isomers. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit. St. Paul, MN.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Norflurazon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Norflurazon
CASRN:	27314-13-2
DTXSID:	DTXSID8024234
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0049

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	89	Based on decreased mean body weight and increased food conversion ratio in female dogs, and liver inflammation in both sexes	general population	OPP 2022

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.44	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Norflurazon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.015	mg/kg/day	OPP 2022	MRID 50537301	Based on decreased mean body weight and increased food conversion ratio in female dogs, and liver inflammation in both sexes	general population	0.0338	89	[133]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information (OPP 2022) has been published since that time and has been used to derive an updated HRL for Norflurazon.
Cancer Classification (CC)	C		OPP 2022						[133]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.096	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	8000	mg/kg	NIH HSDB	
LOAEL	4.77	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.53	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	11	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0101391	mol/kg	TEST QSAR	
Ames mutagenicity test	0.227	no units	TEST QSAR	
Developmental toxin test	0.941	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Norflurazon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,576	230	Sites	3.04	0.00027	0.02	0.44	26.5	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	13	384,425	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	0	0

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	0

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	2	Sites	11.8	0.0313	0.0313	0.0928	0.096	µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	4	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,690	153	Sites	2.69	0.00025	0.08	0.839	96	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	6	Sites	2.74	0.007992	0.0248	0.222	0.352	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	3	Sites	25.0	0.0313	0.0313	0.09	0.132	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	199	29	Sites	14.6	0.05	0.13	0.392	1.49	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5.26	0.0137	0.0206	0.026	0.0274	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	12	Sites	1.74	3e-04	0.00195	0.045	0.0563	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000453	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54622	days	
Boiling point	OPERA QSAR	315.675	degree C	
Boiling point	TEST QSAR	355.301	degree C	
Vapor pressure	OPERA QSAR	2.93E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000708	mmHg	
Solubility in water	OPERA QSAR	30778.77652	µg/L	
Solubility in water	TEST QSAR	27512.502	µg/L	
Bioconcentration factor	OPERA QSAR	22.9098	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1901.56	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.37755	no units	
Henry's Law constant	OPERA QSAR	1.11E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Norflurazon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
133	OPP. 2022. Norflurazon: Revised Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D462848
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Oryzalin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Oryzalin
CASRN:	19044-88-3
DTXSID:	DTXSID8024238
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.058

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	carcinogen with linear mode of action	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3.8	Mammary Gland tumors in Fisher 344 rats (F); Skin, Thyroid tumors in Fisher 344 rats (M)(F); Increases in thyroid follicular cell tumors in both sexes, skin tumors in both sexes and fibroadenomas in female rats. Low-dose extrapolation based on thyroid follicular cell tumors in female rats.	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.221	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Oryzalin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.19	mg/kg/day	OPP 2017	MRID: 42401501	based on systemic/parental increased kidney weights, and parental and offspring hyaline droplets, and nephrosis.	general population	0.0338	1100	[284]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Slope Factor (CSF)	0.00779	$(mg/kg/day)^{-1}$	OPP 2017	MRIDs: 00026779, 00044332, 00070569	Mammary Gland tumors in Fisher 344 rats (F); Skin, Thyroid tumors in Fisher 344 rats (M)(F); Increases in thyroid follicular cell tumors in both sexes, skin tumors in both sexes and fibroadenomas in female rats. Low-dose extrapolation based on thyroid follicular cell tumors in female rats.	general population	0.0338	3.8	[284]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	L		OPP 2017						[284]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	7.1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.25	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.00411	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.9	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1000	mg/kg	NIH HSDB	min
LD50	10000	mg/kg	NIH HSDB	max
LOAEL	0.225	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	521	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.225	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	521	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	40	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1429	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	45.88	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1429	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	4.56	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0124165	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.039	no units	TEST QSAR	
Developmental toxin test	1.213	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Oryzalin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,589	128	Sites	1.69	0.00161	0.021	0.221	2.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	10	249,669	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	0	0

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	4	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,020	78	Sites	1.30	0.00144	0.0252	0.23	3.2	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	246	47	Sites	19.1	0.02	0.084	0.345	2.62	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	2	Sites	0.29	0.0108	0.0799	0.135	0.149	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	3	Sites	14.3	0.0146	0.0354	0.052	0.057	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000179	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53535	days	
Boiling point	OPERA QSAR	298.42	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	2.89E-09	mmHg	
Vapor pressure	TEST QSAR	0.000000107	mmHg	
Solubility in water	OPERA QSAR	4918.312	µg/L	
Solubility in water	TEST QSAR	2531.8916	µg/L	
Bioconcentration factor	OPERA QSAR	2.34495	no units	
Bioconcentration factor	TEST QSAR	13.4896	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2504.16	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.7247	no units	
Henry's Law constant	OPERA QSAR	2.9E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Oryzalin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
284	USEPA. 2017. Oryzalin. Human Health Draft Risk Assessment (DRA) for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D431421.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Oxadiazon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Oxadiazon
CASRN:	19666-30-9
DTXSID:	DTXSID3024239
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.36

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.416	Liver tumors in CD-1 mice (M)(F), Fisher 344 rats (M); based on statistically significant increases in liver adenomas and combined adenomas/carcinomas in male mice	general population	OPP 2021; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.15	90th Percentile	Finished Water	PDP	2001 - 2013

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Oxadiazon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.005	mg/kg/day	OPP 2021; OPP 2020	MRID: 00149003	Based on increased liver weights in both sexes and increased total serum protein in females	general population	0.0338	30	[363]; [350]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Slope Factor (CSF)	0.0711	$(mg/kg/day)^{-1}$	OPP 2021; OPP 2020	Brunsman 2001; Diwan 2001	Liver tumors in CD-1 mice (M)(F), Fisher 344 rats (M); based on statistically significant increases in liver adenomas and combined adenomas/carcinomas in male mice	general population	0.0338	0.416	[363]; [350]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	L		OPP 2021; OPP 2020						[363]; [350]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	3.4	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.12	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	max
LD50	3500	mg/kg	NIH HSDB	min
LOAEL	296	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	3.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.36	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	296	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro	30	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00179887	mol/kg	TEST QSAR	
Ames mutagenicity test	0.434	no units	TEST QSAR	
Developmental toxin test	0.874	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Oxadiazon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	1,015	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	0	0

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	6.67	0.025	0.0945	0.15	0.164	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	254	17	Sites	6.69	0.0012	0.0218	0.216	1.53	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	1	Sites	12.5	0.086	0.086	0.086	0.086	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	709	275	Sites	38.8	1.1e-06	0.000242	0.0261	2.6219	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	4	Sites	19.0	0.00391	0.0154	0.0412	0.0601	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water, Chronic (cancer)	2021	OPP	1.88	ug/L	Pesticide in Water Calculator (PWC), v1.52	The modeled surface water chronic, cancer concentration provided by the most recent available EPA OPP exposure assessment was selected as the occurrence concentration for oxadiazon. This value coincides with the critical effects of liver adenomas and carcinomas provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000162	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.78346	days	
Boiling point	OPERA QSAR	343.817	degree C	
Boiling point	TEST QSAR	356.765	degree C	
Vapor pressure	OPERA QSAR	0.000000112	mmHg	
Vapor pressure	TEST QSAR	8.81E-08	mmHg	
Solubility in water	OPERA QSAR	676.6312	µg/L	
Solubility in water	TEST QSAR	2993.0574	µg/L	
Bioconcentration factor	OPERA QSAR	1202.29	no units	
Bioconcentration factor	TEST QSAR	94.189	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3232.19	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.79797	no units	
Henry's Law constant	OPERA QSAR	7.95E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Oxadiazon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
350	USEPA. 2020. Oxadiazon. Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
363	USEPA. 2021. Oxadiazon: Addendum to the Acute, Chronic, and Cancer Dietary Exposure and Risk Assessments in Support of the Registration Review Preliminary Interim Decision. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D461595.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Oxyfluorfen

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Oxyfluorfen
CASRN:	42874-03-3
DTXSID:	DTXSID7024241
Use:	Pesticide; herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.53

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	2	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.404	Liver tumors in CD-1 mice (M)	general population	OPP 2021; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.214	90th Percentile	Finished Water	UCMR 4	2018-2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Oxyfluorfen

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2021; OPP 2019	MRID: 00037939	Based on liver toxicity (microscopic liver lesions; increased absolute and relative liver weights; and elevated liver enzymes).	general population	0.0338	200	[364]; [315]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Slope Factor (CSF)	0.0732	$(mg/kg/day)^{-1}$	OPP 2021; OPP 2019	Kidwell 2010	Liver tumors in CD-1 mice (M)	general population	0.0338	0.404	[364]; [315]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL
Cancer Classification (CC)	C		OPP 2021; OPP 2019						[364]; [315]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.000437	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.2	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	18.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	848	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	848	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	21	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1058.6	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	51.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1058.6	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	14	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00874984	mol/kg	TEST QSAR	
Ames mutagenicity test	0.253	no units	TEST QSAR	
Developmental toxin test	0.864	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Oxyfluorfen

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020	5,028	7	Sites	0.14	0.053	0.0606	0.214	0.38	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,175	13	Sites	0.31	0.001	0.015	0.0664	1.94	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	29	1051734	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	4,983

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,588	54	Sites	1.18	0.001	0.0188	0.118	4.27	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	396	103	Sites	26.0	0.0038	0.125	0.708	13.5	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	15.8	0.00147	0.00482	0.0487	0.0864	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	4.76	0.0193	0.0507	0.0758	0.0821	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		1.22E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54301	days	
Boiling point	OPERA QSAR	358.206	degree C	
Boiling point	TEST QSAR	366.917	degree C	
Vapor pressure	OPERA QSAR	0.000000201	mmHg	
Vapor pressure	TEST QSAR	0.000000226	mmHg	
Solubility in water	OPERA QSAR	113.9355	µg/L	
Solubility in water	TEST QSAR	1208.078	µg/L	
Bioconcentration factor	OPERA QSAR	12848.1	no units	
Bioconcentration factor	TEST QSAR	320.627	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	99588.3	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.72975	no units	
Henry's Law constant	OPERA QSAR	0.00000328	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Oxyfluorfen

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
315	USEPA. 2019. Oxyfluorfen Draft Human Health Risk Assessment for Registration Review: June 19, 2019. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
364	USEPA. 2021. Oxyfluorfen: Addendum to the 2019 Draft Human Health Risk Assessment for Registration Review. EPA-HQ-OPP-2014-0778-0067. DP No. D458758. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

p-Cresol
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	p-Cresol
CASRN:	106-44-5
DTXSID:	DTXSID7021869
Use:	Chemical intermediate making synthetic resins; in disinfectants and fumigants; as industrial solvent.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0017

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reduced longevity	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	neurotoxicity and mortality in pregnant rabbits	females of reproductive age	PPRTV 2010

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.168	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

p-Cresol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	PPRTV 2010	BRRC 1988a	neurotoxicity and mortality in pregnant rabbits	females of reproductive age	0.0354	100	[239]	
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	ATSDR 2008	NTP 2008	bronchiole hyperplasia of the lung and follicular degeneration of the thyroid gland	general population	0.0338	600	[17]	
Cancer Classification (CC)	C		IRIS 1990						[167]	Note: The Oral RfD for 4-methylphenol was withdrawn on 08/01/1991; C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2009	12/17/2019	433	0	9	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.003	mg/l	MN DOH	
Provisional Subchronic RfD	0.02	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1800	mg/kg	NIH HSDB	max
LD50	207	mg/kg	NIH HSDB	min
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00483059	mol/kg	TEST QSAR	
Ames mutagenicity test	0.06	no units	TEST QSAR	
Developmental toxin test	0.214	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

p-Cresol
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	563	52	Sites	9.24	0.01	0.03	0.168	73	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	8	191,725

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	49	1	Sites	2.04	0.1	0.1	0.1	0.1	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,551	781	Sites	22.0	0.01	0.06	0.33	1400	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	21	Sites	55.3	0.0086	0.0219	0.0391	0.135	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	23	Samples	34.3				0.13	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95.2	0.026	0.172	0.517	1.31	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	13	Sites	61.9	0.046	0.3	1.1	1.2	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00153	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.33887	days	
Boiling point	OPERA QSAR	201.807	degree C	
Boiling point	TEST QSAR	185.666	degree C	
Vapor pressure	OPERA QSAR	0.109758	mmHg	
Vapor pressure	TEST QSAR	0.21677	mmHg	
Solubility in water	OPERA QSAR	21403176.94	µg/L	
Solubility in water	TEST QSAR	15310353.06	µg/L	
Bioconcentration factor	OPERA QSAR	15.2196	no units	
Bioconcentration factor	TEST QSAR	9.39723	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	496.019	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.94036	no units	
Henry's Law constant	OPERA QSAR	0.000000985	atm-m^3/mol	

p-Cresol
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
17	ATSDR. 2008. Toxicological Profile for Cresols. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
167	USEPA. 1990. Chemical Assessment Summary 4-Methylphenol; CASRN 106-44-5. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
239	USEPA. 2010. Provisional Peer-Reviewed Toxicity Values for 4-Methylphenol (p-Cresol) (CASRN 106-44-5). EPA/690/R-10/019F. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Pendimethalin

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Pendimethalin
CASRN:	40487-42-1
DTXSID:	DTXSID7024245
Use:	Selective herbicide for control of broadleaf weeds and grassy weed species
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000044

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	Thyroid hormonal, organ weights and histopathological changes.	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.087	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Pendimethalin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.3	mg/kg/day	OPP 2019	Fischer 1991 and 1993; Devito and Braverman 1993	Thyroid hormonal, organ weights and histopathological changes.	general population	0.0338	2000	[316]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	C		OPP 2019						[316]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	1	mg/kg/day	EPA HHBP	
Drinking Water Guideline Value	0.02	mg/l	WHO Drinking Water Quality Guidelines	
Health-Based Screening Level	2	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1050	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	51	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	806.9	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	36	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	21	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	381.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	410.8	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	39.2	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	43.4	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00674528	mol/kg	TEST QSAR	
Ames mutagenicity test	0.117	no units	TEST QSAR	
Developmental toxin test	0.948	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Pendimethalin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,567	400	Sites	3.79	2e-04	0.018	0.087	3.2	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	16,260,945	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	15	22,245

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	2	Sites	13.3	0.007492	0.008	0.0664	0.076	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,914	544	Sites	4.21	6e-04	0.022	0.108	42	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	568	145	Sites	25.5	0.0022	0.198	1.3	8.35	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	13	Sites	34.2	0.000319	0.0039	0.0301	0.578	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	4	Sites	0.58	7e-04	0.00145	0.00437	0.0056	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	11	Sites	52.4	0.0013	0.036	0.477	1.44	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000828	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54085	days	
Boiling point	OPERA QSAR	330.011	degree C	
Boiling point	TEST QSAR	363.278	degree C	
Vapor pressure	OPERA QSAR	0.0000299	mmHg	
Vapor pressure	TEST QSAR	0.000000621	mmHg	
Solubility in water	OPERA QSAR	301.00384	µg/L	
Solubility in water	TEST QSAR	2768.11008	µg/L	
Bioconcentration factor	OPERA QSAR	578.79	no units	
Bioconcentration factor	TEST QSAR	59.5662	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	5013.25	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.1983	no units	
Henry's Law constant	OPERA QSAR	0.000000777	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Pendimethalin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
316	USEPA. 2019. Pendimethalin Acute and Chronic Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessment for the Section 3 Registration Action (New Uses on Leaf Petiole Subgroup 22B, Monarda, and Rosemary). U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D449631
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Pentachloronitrobenzene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Pentachloronitrobenzene
CASRN:	82-68-8
DTXSID:	DTXSID2021105
Use:	Soil fungicide on lawns and ornamental crops
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000055

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	710	Based on thyroid follicular cell hypertrophy/hyperplasia in both sexes; in a two-generation study: based on increased incidence and severity of thyroid follicular hypertrophy/hyperplasia in parental males.	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.039	90th Percentile	Finished Water	PDP	2001 - 2013

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Pentachloronitrobenzene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.12	mg/kg/day	OPP 2021	MRIDs: 43015801, 43469301, 43469302, 43469303	Based on thyroid follicular cell hypertrophy/hyperplasia in both sexes; in a two-generation study: based on increased incidence and severity of thyroid follicular hypertrophy/hyperplasia in parental males.	general population	0.0338	710	[365]	"This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www./sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL."
Cancer Classification (CC)	C		OPP 2021						[365]	NOTE: based on the presence of thyroid follicular cell adenomas in rats; "RfD approach should to be used to quantify human risk"; C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP (1978)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Mice NE	no units	HHS NTP (1986)	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP (1978)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NT	no units	HHS NTP (1986)	NT = Not tested for carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP (1978)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice NE	no units	HHS NTP (1986)	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP (1978)	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats NT	no units	HHS NTP (1986)	NT = Not tested for carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	12000	mg/kg	NIH HSDB	max
LD50	265	mg/kg	NIH HSDB	min
LOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	4.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	14	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	333	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	985	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	985	mg/kg/day	EPA Toxicity Reference Database	max
TD50	1010	mg/kg/day	NIH CPDB	min
TD50	30700	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00803526	mol/kg	TEST QSAR	
Ames mutagenicity test	0.4	no units	TEST QSAR	
Developmental toxin test	0.179	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Pentachloronitrobenzene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	9	450,710	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	140

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	11	1	Sites	9.09	0.039	0.039	0.039	0.039	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	47	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	421	3	Sites	0.71	3e-05	0.00013	0.00033	0.00043	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	24	0	Sites	0				0	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5.26	0.000156	0.00108	0.00182	0.00201	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	4.76	0.00087	0.00087	0.00087	0.00087	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Limit of solubility as a surrogate for occurrence concentration in Surface Water, Peak	2021	OPP	440	ug/L		The most recent EPA OPP exposure and risk assessment recommends using the limit of solubility of PCNB as the upper bound exposure estimate for PCNB and residues of concern.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000254	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	12.2829	days	
Boiling point	OPERA QSAR	327.939	degree C	
Boiling point	TEST QSAR	319.746	degree C	
Vapor pressure	OPERA QSAR	0.0000501	mmHg	
Vapor pressure	TEST QSAR	0.000218776	mmHg	
Solubility in water	OPERA QSAR	445.9332	µg/L	
Solubility in water	TEST QSAR	838.7088	µg/L	
Bioconcentration factor	OPERA QSAR	550.819	no units	
Bioconcentration factor	TEST QSAR	716.143	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	9556.21	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.63975	no units	
Henry's Law constant	OPERA QSAR	0.000939027	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Pentachloronitrobenzene
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
365	USEPA. 2021. Pentachloronitrobenzene (PCNB): Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D461859.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Phenanthrene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phenanthrene
CASRN:	85-01-8
DTXSID:	DTXSID6024254
Use:	Dyestuffs, explosives, synthesis of drugs, biochemical research, manufacturing phenanthrenequinone.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.05	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phenanthrene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Cancer Classification (CC)	D		IRIS 1990						[171]	Note: No RfD equivalent value derived. D = Not classifiable as to human carcinogenicity.
Cancer Classification (CC)	D		OW 1991						[178]	Note: No RfD equivalent value derived. D = Not classifiable as to human carcinogenicity.
Cancer Classification (CC)	I		PPRTV 2009						[233]	Note: Data are inadequate to derive a chronic or subchronic oral RfD or inhalation-based RfC. I = Inadequate evidence to determine carcinogenic potential.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						3/8/2008	3/16/2020	2319	0	16	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	700	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00893306	mol/kg	TEST QSAR	
Ames mutagenicity test	0.629	no units	TEST QSAR	
Developmental toxin test	0.651	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Phenanthrene
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	589	58	Sites	9.85	0.004	0.0165	0.05	0.18	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	25	105,325

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	4	Sites	8.00	0.003	0.005	0.008	0.009	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	28	1	Sites	3.57	0.001	0.002	0.002	0.002	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	481	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	233	2	Sites	0.86	0.1	0.3	0.356	0.37	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	634	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,061	852	Sites	16.8	0.002	0.04	1.87	6600	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	15.8	0.0074	0.0176	0.0239	0.0241	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95.2	0.017	0.944	5.08	28.8	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	2	Sites	9.52	0.0086	0.0087	0.00878	0.0088	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000835	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	42.3429	days	
Boiling point	OPERA QSAR	339.957	degree C	
Boiling point	TEST QSAR	340.522	degree C	
Vapor pressure	OPERA QSAR	0.000111975	mmHg	
Vapor pressure	TEST QSAR	0.000049	mmHg	
Solubility in water	OPERA QSAR	254.87462	µg/L	
Solubility in water	TEST QSAR	632.7307	µg/L	
Bioconcentration factor	OPERA QSAR	2486.86	no units	
Bioconcentration factor	TEST QSAR	633.87	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	22309.4	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.46529	no units	
Henry's Law constant	OPERA QSAR	0.0000426	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phenanthrene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
171	USEPA. 1990. Chemical Assessment Summary, Phenanthrene. U.S. Environmental Protection Agency, National Center for Environmental Protection, Integrated Risk Information System (IRIS), Washington, D.C.
178	USEPA. 1991. Drinking Water Criteria Document for Polycyclic Aromatic Hydrocarbons (PAHs). U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH.
233	USEPA. 2009. Provisional Peer-Reviewed Toxicity Values for Phenanthrene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Phenol

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phenol
CASRN:	108-95-2
DTXSID:	DTXSID5021124
Use:	Pestcide; chemical intermediate
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00029

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	reproductive and developmental effects	10	6

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3000	reductions in mean fetal body weight per litter	females of reproductive age	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.856	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phenol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.6	mg/kg/day	OPP 2019	Jones-Price and Ledoux 1983	reductions in mean fetal body weight per litter	females of reproductive age	0.0354	3000	[322]	chose females of reproductive age because critical effect was in fetuses during gestation and females of reproductive age is more sensitive than pregnant women
Cancer Classification (CC)	I		OPP 2019						[322]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	6	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	1	mg/kg/day	CDC ATSDR	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	4	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	4	mg/l	EPA Human Health Criteria for CWA	
Lifetime Health Advisory	2	mg/l	EPA DWSHA 2018	
Reference Concentration (RfC)	200	µg/m^3	CalEPA OEHHA Chemical Database	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	100	mg/kg	NIH HSDB	min
LD50	530	mg/kg	NIH HSDB	max
LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	750	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	0	percent	EPA Chemistry Dashboard	
TD50	133	mg/kg/day	NIH CPDB	min
TD50	18500	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00461318	mol/kg	TEST QSAR	
Ames mutagenicity test	0.246	no units	TEST QSAR	
Developmental toxin test	0.58	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Phenol

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	465	91	Sites	19.6	0.08	0.335	0.856	12	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	44	5,695,983

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	36	2	Sites	5.56	0.1	0.23	0.364	0.37	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	7	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	34	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,676	1340	Sites	28.7	0.02	0.33	1.1	340	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	19	1	Sites	5.26	32	32	32	32	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	4	Sites	10.5	0.0548	0.0674	0.13	0.151	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.1	0.45	0.73	0.8	µg/L	
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	1	Samples	1.49				0.075	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	17	3	Sites	17.6	1.1	1.16	1.49	1.57	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	125	108	Samples	86.4	6	26.5	166	85000	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	11	Sites	52.4	1	1.6	3.55	5.4	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000317	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.59014	days	
Boiling point	OPERA QSAR	181.892	degree C	
Boiling point	TEST QSAR	176.783	degree C	
Vapor pressure	OPERA QSAR	0.348397	mmHg	
Vapor pressure	TEST QSAR	0.151356	mmHg	
Solubility in water	OPERA QSAR	86046574.77	µg/L	
Solubility in water	TEST QSAR	27710819.95	µg/L	
Bioconcentration factor	OPERA QSAR	17.3621	no units	
Bioconcentration factor	TEST QSAR	7.60326	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	27.0339	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.46171	no units	
Henry's Law constant	OPERA QSAR	0.000000336	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phenol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
322	USEPA. 2019. Registration Review Draft Risk Assessment for Phenol and Salts. EPA-HQ-OPP-2012-0810-0007. DP No. 453361. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Phorate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phorate
CASRN:	298-02-2
DTXSID:	DTXSID4032459
Use:	Insecticide used on corn, sugar beets, cotton, brassicas, and coffee
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.10

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	non-cancer effects	3	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1	red blood cell and brain cholinesterase inhibition	general population	OPP 2006; OPP 1999

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.102	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phorate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00017	mg/kg/day	OPP 2006; OPP 1999	MRID: 40174527	red blood cell and brain cholinesterase inhibition	general population	0.0338	1	[212]; [193]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2006) exists but does not contribute new data for the HRL
Cancer Classification (CC)	E		OPP 1999						[193]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0055	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.00083	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.0011	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1.1	mg/kg	NIH HSDB	min
LD50	3.7	mg/kg	NIH HSDB	max
LOAEL	0.05	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	0.8	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.01	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.727	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00000783	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.017	no units	TEST QSAR	
Developmental toxin test	-0.176	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Phorate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,572	21	Sites	0.20	0.002	0.013	0.102	0.6	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	12	1,449,217	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	1	Sites	5.88	0.078	0.078	0.078	0.078	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,745	42	Sites	0.33	0.003	0.055	0.12	0.15	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	1	Sites	8.33	0.062	0.062	0.062	0.062	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,275	10	Sites	0.78	0.016	0.075	0.129	0.22	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.0032	0.0032	0.0032	0.0032	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000178	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	142.794	days	
Boiling point	OPERA QSAR	285.18	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000630237	mmHg	
Vapor pressure	TEST QSAR	0.000179473	mmHg	
Solubility in water	OPERA QSAR	34928.5958	µg/L	
Solubility in water	TEST QSAR	60753.96456	µg/L	
Bioconcentration factor	OPERA QSAR	71.5998	no units	
Bioconcentration factor	TEST QSAR	55.5904	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	501.841	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.69306	no units	
Henry's Law constant	OPERA QSAR	0.00000158	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phorate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
193	USEPA. 1999. PHORATE: Revised HED Chapter of the Reregistration Eligibility Decision Document (RED), Case #0103, PC Code 057201; Barcode No. D253368. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
212	USEPA. 2006. Finalization of Interim Reregistration Eligibility Decisions (IREDs) and Interim Tolerance Reassessment and Risk Management Decisions (TREDs) for the Organophosphate Pesticides, and Completion of the Tolerance Reassessment and Reregistration Eligibility Process for the Organophosphate Pesticides. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Phosmet

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phosmet
CASRN:	732-11-6
DTXSID:	DTXSID5024261
Use:	Non-systemic acaricide and insecticide for fruits, nuts, berries, cotton, ornamentals, other crops, and livestock
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.055

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	2	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.9	pup red blood cell acetylcholinesterase inhibition	females of reproductive age	OPP 2016

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0495	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phosmet

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00016	mg/kg/day	OPP 2016	Barnett 2009	pup red blood cell acetylcholinesterase inhibition	females of reproductive age	0.0354	0.9	[273]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	S		OPP 2016						[273]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.0093	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0014	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.003	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	26	mg/kg	NIH HSDB	min
LD50	160	mg/kg	NIH HSDB	max
LOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	18	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	18	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000134896	mol/kg	TEST QSAR	
Ames mutagenicity test	0.722	no units	TEST QSAR	
Developmental toxin test	0.568	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Phosmet

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,833	4	Sites	0.14	0.006	0.0125	0.0495	0.063	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	39	793025	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	41	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,017	5	Sites	0.1	0.017	0.038	0.118	0.172	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	111	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1,068	6	Sites	0.56	0.0535	0.375	0.978	1.5	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
Southeast Stream Quality Assessment (SESQA) (Ambient) [399]	2014	1	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.04E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	164.989	days	
Boiling point	OPERA QSAR	414.092	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000049	mmHg	
Vapor pressure	TEST QSAR	0.00000668	mmHg	
Solubility in water	OPERA QSAR	20783.8050000	µg/L	
Solubility in water	TEST QSAR	18975.1380000	µg/L	
Bioconcentration factor	OPERA QSAR	1.82653	no units	
Bioconcentration factor	TEST QSAR	9.18333	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	812.665	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.78136	no units	
Henry's Law constant	OPERA QSAR	3.73E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phosmet

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
273	USEPA. 2016. Phosmet. Draft Human Health Risk Assessment to Support Registration Review. EPA-HQ-OPP-2009-0316-0022. DP No. D420736. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
399	USGS. n.d. Southeast Stream Quality Assessment (SESQA). https://pubs.usgs.gov/publication/fs20143023
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Phosphate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phosphate
CASRN:	14265-44-2
DTXSID:	DTXSID7039672
Use:	Used as an additive in water treatment to prevent pipe corrosion and protect drinking water quality. Also used in fertilizers and personal care products.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0015

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
1	no adverse effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	288000	highest inorganic phosphate intake in adults considered normal; threshold above which elevated inorganic phosphate in the extracellular fluid would result in toxicity	general population	PPRTV 2011

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
424	90th Percentile	All Ambient Water	NAWQA	1991 - 2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phosphate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	48.6	mg/kg/day	PPRTV 2011	Nordin 1988	highest inorganic phosphate intake in adults considered normal; threshold above which elevated inorganic phosphate in the extracellular fluid would result in toxicity	general population	0.0338	288000	[242]	Note: Subchronic and chronic provisional reference dose based on data of intravenous administration of neutral phosphate solution. Subsequently, this has been related to serum inorganic phosphate concentrations (Figure 2 of the assessment). Although the route of exposure is intravenous, this is the most precise exposure to phosphate out of all the considered assessments, and Figure 2 helps its reliability.
Cancer Classification (CC)	I		PPRTV 2023						[389]	Note: Cancer classification of I for aluminum phosphate salts. I = Inadequate evidence to determine carcinogenic potential
Cancer Classification (CC)	I		PPRTV 2021						[369]	Note: Cancer classification of I for calcium phosphate salts. I = Inadequate evidence to determine carcinogenic potential
Cancer Classification (CC)	I		PPRTV 2011						[242]	Note: Cancer classification of I for inorganic phosphates. I = Inadequate evidence to determine carcinogenic potential
Cancer Classification (CC)	I		PPRTV 2021						[370]	Note: Cancer classification of I is for monoammonium phosphate (MAP), diammonium phosphate (DAP), and ammonium polyphosphate (APP). No toxicity guideline values, non-cancer or cancer, proposed. I = Inadequate evidence to determine carcinogenic potential
Cancer Classification (CC)	I		PPRTV 2022						[377]	Note: Cancer classification of I is for sodium and potassium salts of inorganic phosphates. I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						6/1/2022	1/16/2025	11,052	10	56	0

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Phosphate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	12,233	9484	Sites	78	110	300	424	510	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	5	Sites	100	3	10	26	30	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	108	77	Sites	71	10	1000	1900	2370000	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	27	17	Sites	63	1.5	120	230	630	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	53	44	Sites	83				6000	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	68		220		1960	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			700	700		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	281	145	Sites	52	8	180	789	2010000	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	2	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	23	16	Sites	70	14	80	566	1590	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	50,302	40011	Sites	80	10	180	702	3200	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	24		Sites	83		130		560	µg/L	
STEWARDS/Agricultural Research Service (ARS) - USDA (Ambient)	2000 - 2015	22	22	Sites	100	10	170	1030	46700	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	17	Sites	91	31	235	579	1670	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	2,112	1862	Samples	88	3	20	210	530000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	421	321	Samples	76	10	72	2500	9200000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	2	2	Sites	100	10	100	110	200	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	1	1	Sites	100	141	154	164	167	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phosphate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
242	USEPA. 2011. Provisional Peer-Reviewed Toxicity Values for Inorganic Phosphates (Orthophosphoric Acid and Inorganic Phosphate Compounds, Including Ortho- and Condensed Phosphates) (Various CASRNs included in the text). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
369	USEPA. 2021. Provisional Peer-Reviewed Toxicity Values for Calcium Salts of Inorganic Phosphates (multiple CASRNs). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
370	USEPA. 2021. Provisional Peer-Reviewed Toxicity Values for Ammonium Salts of Inorganic Phosphates: Monoammonium Phosphate (MAP) (CASRN 7722-76-1) Diammonium Phosphate (DAP) (CASRN 7783-28-0). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
377	USEPA. 2022. Provisional Peer-Reviewed Toxicity Values for Sodium and Potassium Salts of Inorganic Phosphates (Multiple CASRNs). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
389	USEPA. 2023. Provisional Peer-Reviewed Toxicity Values for Aluminum Phosphate Salts (multiple CASRNs). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Phosphorus

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Phosphorus
CASRN:	7723-14-0
DTXSID:	DTXSID1024382
Use:	Former pesticide; chemical intermediate; as ammunition
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
381	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Phosphorus

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	50	mg/kg/day	IOM 1997		metastatic calcification, skeletal porosity, interference with calcium absorption	general population	0.0338	300000	[94]	Note: the RfD equivalent was derived from a Tolerable Upper Intake Level (safe boundary at the high end of the range of intake per day) of 4000 mg/day which was divided by the average adult bodyweight of 80 kg

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3.03	mg/kg	NIH HSDB	min
LD50	4.85	mg/kg	NIH HSDB	max

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Phosphorus

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	987	392	Sites	40	42	104	381	5550	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	8,742	6355	Sites	73	1	70	400	52800	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	250,000,000 - 500,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	4	4	Sites	100	140	340	6160	6400	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	68		200		700	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			380	380		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	35,492	30425	Sites	86	1	60	551	3150000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	88		70		220	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	100	3.83	92.1	253	778	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	88	39	Samples	44	50	232	2800	8800	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	55	48	Sites	73	10	90	257	2040	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	7	7	Sites	100	50	130	1100	1500	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	50	22	Samples	44	13.1	400	5530	19200	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Phosphorus

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
94	IOM. 1997. Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board. Dietary Reference Intakes for calcium, phosphorus, magnesium, vitamin D, and fluoride. National Academy Press, Institute of Medicine (IOM), Washington, DC.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Piperonyl butoxide

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Piperonyl butoxide
CASRN:	51-03-6
DTXSID:	DTXSID1021166
Use:	Synergist for the pyrethrins and related insecticides
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000019

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	950	decrease in body weight gain, and increases in alkaline phosphatase activity, liver weight and hepatocellular hypertrophy, decreased body weight	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0182	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Piperonyl butoxide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.16	mg/kg/day	OPP 2017	Goldenthal 1993a and b	decrease in body weight gain, and increases in alkaline phosphatase activity, liver weight and hepatocellular hypertrophy, decreased body weight	general population	0.0338	950	[285]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	C		OPP 2017						[285]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	30	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	5	mg/kg/day	EPA HHBP	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Health-Based Screening Level	0.992	mg/l	Health-based screening levels from USGS	
Cancer Classification (CC)	Female.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	11500	mg/kg	NIH HSDB	max
LD50	2600	mg/kg	NIH HSDB	min
LOAEL	15.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	528	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.7	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	
TD50	1180	mg/kg/day	NIH CPDB	min
TD50	7820	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0074131	mol/kg	TEST QSAR	
Ames mutagenicity test	0.08	no units	TEST QSAR	
Developmental toxin test	0.43	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Piperonyl butoxide
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,594	135	Sites	5	1e-04	0.0053	0.0182	0.377	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	3	4114	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	3	8

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	11	1	Sites	9	0.095	0.095	0.095	0.095	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0					µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,675	204	Sites	8	2e-04	0.006	0.0343	117	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	4	1	Sites	25	0.062	0.062	0.062	0.062	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	140	43	Sites	31	0.000676	0.0147	0.395	11.2	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	12	Sites	32	0.0084	0.064	0.118	0.205	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	5	Sites	0.86	0.0021	0.0024	0.014	0.0196	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	11	Sites	52	0.00569	0.0427	0.0688	0.110	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	17	Sites	81	0.00160	0.0254	0.094	0.0990	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000937	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.73111	days	
Boiling point	OPERA QSAR	324.413	degree C	
Boiling point	TEST QSAR	393.28	degree C	
Vapor pressure	OPERA QSAR	8.62E-08	mmHg	
Vapor pressure	TEST QSAR	0.000000708	mmHg	
Solubility in water	OPERA QSAR	14350.0256	µg/L	
Solubility in water	TEST QSAR	24503.3456	µg/L	
Bioconcentration factor	OPERA QSAR	126.718	no units	
Bioconcentration factor	TEST QSAR	18.55	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	10456.6	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.74542	no units	
Henry's Law constant	OPERA QSAR	0.00000224	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Piperonyl butoxide

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
285	USEPA. 2017. Piperonyl Butoxide (PBO). Draft Human Health Risk Assessment Registration Review and for Proposed New Use on Edible Fungi Crop Group 21. EPA-HQ-OPP-2010-0498-0021. DP Nos. D434163 D439507. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Potassium

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Potassium
CASRN:	9/7/7440
DTXSID:	DTXSID9049748
Use:	Naturally occurring metal; laboratory reagent
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
5939	90th Percentile	Finished Water	NIRS	1984-1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Potassium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			HC 2008						[80]	no RfD derived because "potassium intake from drinking water is well below the level at which adverse health effects may occur"
			WHO 2009						[417]	Note: The WHO did not establish a health-based guideline value for potassium in drinking water because "Currently, there is no evidence that potassium levels in municipally treated drinking water, even water treated with potassium permanganate, are likely to pose any risk for the health of consumers."

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	59	mg/kg/day	IOM 2005		arrhythmias and hyperkalemia in individuals with impaired potassium excretion, detrimental for individuals with impaired kidney function	general population	0.0338	350000	[96]	Note: the RfD equivalent was derived from an adequate intake value of 4.7 g/day which was divided by the average adult bodyweight of 80 kg and converted to units of mg
			IOM 2019						[98]	Short-term potassium supplementation of approximately 2,500 mg/d (64 mmol/d) on the background of a usual diet appears to be safe for generally healthy individuals. This level of potassium intake would likely be below the UL for individuals without kidney disease, diabetes, heart failure, adrenal insufficiency, or individuals using ACE-Is, ARBs, or other medications that may raise blood potassium concentrations to levels that could lead to adverse effects. There is evidence that very high doses of supplemental potassium ingestion can lead to adverse events, and in extreme cases has led to death, even in the absence of kidney disease or other factors that alter potassium excretion. However, without a specific indicator of a toxicological effect of high potassium intake, a potassium UL cannot be

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Potassium

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	958	Sites	97	311	1860	5940	2400	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,553	11520	Sites	100	30	2410	6960	640000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	5	Sites	100	410	1410	2120	2220	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	26	26	Sites	100	90	3930	7940	89600	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		3070		6870	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	10		Sites			2510	4100		µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	53,580	53271	Sites	99	0.4083	2140	8420	3.6e+07	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		2720		6930	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	757	Sites	100	80	2300	8620	61200	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	687	2450	6980	16700	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	13,565	13557	Samples	100	100	10000	72000	3.9e+07	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	32,325	31550	Samples	98	30	76000	2730000	78200000	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
EPA Ash Database (Wastewater)	1973 - 2014	17	17	Sites	100	1510	8150	11800	53900	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	1340	4290	11200	52700	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	2	2	Sites	100	8020	22500	31600	75700	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	448	442	Samples	99	724	17000	1020000	8930000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Potassium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
80	HC. 2008. Guidance on Potassium from Water Softeners. Health Canada (HC), Water, Air and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
96	IOM. 2005. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Institute of Medicine (IOM), National Academies of Science, Washington, D.C.
98	IOM. 2019. Dietary Reference Intakes for Sodium and Potassium (2019). Institute of Medicine (IOM), National Academies of Science, Washington, D.C.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
417	WHO. 2009. Potassium in drinking-water. Background document for development of WHO Guidelines for drinking-water quality Geneva: World Health Organization.

Prometon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Prometon
CASRN:	1610-18-0
DTXSID:	DTXSID6022341
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	emesis and decreased body weight and increased incidence of mydriasis and ptosis in female dogs	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.043	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Prometon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2021	MRIDs 40097901, 42581201 (Breckenridge and Green 1986; Tisdel 1992; Salamon 1987)	emesis and decreased body weight and increased incidence of mydriasis and ptosis in female dogs	general population	0.0338	300	[366]	
Cancer Classification (CC)	NL		OPP 2021						[366]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.2	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Lifetime Health Advisory	0.4	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2980	mg/kg	NIH HSDB	max
LD50	503	mg/kg	NIH HSDB	min
LOAEL	1524	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	23.3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1524	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.89	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	6	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00269153	mol/kg	TEST QSAR	
Ames mutagenicity test	0.106	no units	TEST QSAR	
Developmental toxin test	0.947	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Prometon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	295	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,687	2207	Sites	21	0.00018	0.009	0.043	40	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	0.22	2016

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	3	Sites	5	0.007	0.018	0.114	0.197	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	49	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	3	Sites	11	0.004	0.009	0.0479	0.061	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	11	Sites	65	0.00028	0.0025	0.009	0.092	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	1	Sites	4	0.0084	0.0084	0.0084	0.0084	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100	0.01	0.01	0.01	0.01	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	450	4	Sites	0.89	0.1	0.11	0.12	0.12	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	17,195	3080	Sites	18	6e-05	0.01	0.057	23.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	74	Sites	34	0.00028	0.0011	0.0056	0.054	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	8	Sites	67	0.00028	0.0025	0.013	0.891	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	707	33	Sites	5	0.0046	0.0895	0.297	1.6	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	18	Sites	47	0.0049	0.00695	0.0295	0.133	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	64	Sites	9	4e-04	0.0036	0.0126	0.0438	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.01	0.01	0.015	0.02	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	19	Samples	14				0.06	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.00326	0.00623	0.00861	0.0092	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	0	Sites	0						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000868	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.81693	days	
Boiling point	OPERA QSAR	336.289	degree C	
Boiling point	TEST QSAR	329.884	degree C	
Vapor pressure	OPERA QSAR	0.0000023	mmHg	
Vapor pressure	TEST QSAR	0.000000752	mmHg	
Solubility in water	OPERA QSAR	686580.5482	µg/L	
Solubility in water	TEST QSAR	903137.3163	µg/L	
Bioconcentration factor	OPERA QSAR	3.054	no units	
Bioconcentration factor	TEST QSAR	7.8886	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	397.963	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.99119	no units	
Henry's Law constant	OPERA QSAR	0.00000003	atm-m^3/mol	

Prometon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
366	USEPA. 2021. Prometon. Second Addendum to the Human Health Draft Risk Assessment in Support of Registration Review Incorporating Refinements to the Estimated Drinking Water Exposures. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Prometryn

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Prometryn
CASRN:	7287-19-6
DTXSID:	DTXSID4024272
Use:	Herbicide for most annual grasses, broadleaf weeds in cotton and celery
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0003

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	degenerative hepatic changes, renal tubule degeneration and bone marrow atrophy.	general population	OPP 2017

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.06	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Prometryn

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2017	Woodard et al. 1965 (MRID 00042794)	degenerative hepatic changes, renal tubule degeneration and bone marrow atrophy.	general population	0.0338	200	[286]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	E		OPP 2017						[286]	E = Evidence of non-carcinogenicity for humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1265	mg/kg	NIH HSDB	min
LD50	5233	mg/kg	NIH HSDB	max
LOAEL	37.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	80.62	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.6	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	80.62	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	12	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00758578	mol/kg	TEST QSAR	
Ames mutagenicity test	0.177	no units	TEST QSAR	
Developmental toxin test	0.57	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Prometryn

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,073	129	Sites	3	0.00017	0.007	0.06	3.73	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	18	1183000	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	0	0

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	99	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.00028	0.025	0.0866	0.231	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,207	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	9,098	266	Sites	3	0.00015	0.009	0.118	10.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	8	Sites	67	0.00028	0.00028	0.00552	0.118	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	657	44	Sites	7	0.0034	0.128	1.07	39.9	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0032	0.0159	0.0261	0.0286	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000291	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.74669	days	
Boiling point	OPERA QSAR	338.851	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000124	mmHg	
Vapor pressure	TEST QSAR	0.000000959	mmHg	
Solubility in water	OPERA QSAR	26713.00072	µg/L	
Solubility in water	TEST QSAR	77922.83464	µg/L	
Bioconcentration factor	OPERA QSAR	12.3274	no units	
Bioconcentration factor	TEST QSAR	9.35406	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	707.421	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.51124	no units	
Henry's Law constant	OPERA QSAR	2.31E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Prometryn

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
286	USEPA. 2017. Prometryn - Preliminary Human Health Risk Assessment for Registration Review and the Risk Assessment for the Section 3 Registration Request for a New Use on Sesame and Crop-Group Conversions. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D435549, D439423.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propanil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propanil
CASRN:	709-98-8
DTXSID:	DTXSID8022111
Use:	Post emergent herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0009

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	7	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	Increased methemoglobin in both sexes	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.198	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propanil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	OPP 2019	MRID: 43303201	Increased methemoglobin in both sexes	general population	0.0338	200	[317]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	S		OPP 2019						[317]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.06	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1384	mg/kg	NIH HSDB	max
LD50	360	mg/kg	NIH HSDB	min
LOAEL	174.1	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	174.1	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	16	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	49	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	6467	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	6.6	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	6467	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00376704	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.006	no units	TEST QSAR	
Developmental toxin test	0.688	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propanil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,152	114	Sites	1	0.001	0.011	0.198	2.73	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	7	4546456	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	51,884

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	54	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	16	6	Sites	38	0.0112	0.042	0.116	0.17	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,728	103	Sites	0.96	0.0014	0.0281	0.17	6.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	11	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	221	39	Sites	18	0.0135	0.46	4.4	57.6	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	3.01	3.01	3.01	3.01	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Southeast Stream Quality Assessment (SESQA) (Ambient) [399]	2014	77	1	Sites	1	0.00205	0.00205	0.00205	0.00205	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000687	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.51639	days	
Boiling point	OPERA QSAR	350.888	degree C	
Boiling point	TEST QSAR	325.947	degree C	
Vapor pressure	OPERA QSAR	0.000000902	mmHg	
Vapor pressure	TEST QSAR	0.00000265	mmHg	
Solubility in water	OPERA QSAR	156050.1971	µg/L	
Solubility in water	TEST QSAR	97637.25104	µg/L	
Bioconcentration factor	OPERA QSAR	69.1099	no units	
Bioconcentration factor	TEST QSAR	16.9824	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	148.212	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.07062	no units	
Henry's Law constant	OPERA QSAR	1.84E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Propanil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
317	USEPA. 2019. Propanil Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D450066.
399	USGS. n.d. Southeast Stream Quality Assessment (SESQA). https://pubs.usgs.gov/publication/fs20143023
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propargite

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propargite
CASRN:	2312-35-8
DTXSID:	DTXSID4024276
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.64

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	6	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.9	Jejunum tumors in CD(BR) rats (M)(F)	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.572	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propargite

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.04	mg/kg/day	OPP 2021; OPP 2019	MRID: 41352401	Decreases in pup body weight in all generations.	general population	0.0338	200	[368]; [318]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides); an updated assessment (2021) published since that time does not impact this HRL.
Cancer Slope Factor (CSF)	0.033	$(mg/kg/day)^{-1}$	OPP 2021	MRID:41750901	Jejunum tumors in CD(BR) rats (M)(F)	general population	0.0338	0.9	[368]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www./sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL.
Cancer Classification (CC)	B2		OPP 2021; OPP 2019						[368]; [318]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Health-Based Screening Level	0.000167	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1480	mg/kg	NIH HSDB	min
LD50	2947	mg/kg	NIH HSDB	max
LOAEL	105	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	6	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	105	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	42	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.011885	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.793	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propargite
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,123	69	Sites	0.68	6e-04	0.04	0.572	20	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	12	6115763	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	2	308

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	54	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,429	48	Sites	0.46	0.00093	0.082	0.232	5.11	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	218	13	Sites	6	0.0084	0.25	1.92	2	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		9.31E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.67208	days	
Boiling point	OPERA QSAR	362.007	degree C	
Boiling point	TEST QSAR	325.241	degree C	
Vapor pressure	OPERA QSAR	0.000000301	mmHg	
Vapor pressure	TEST QSAR	0.00000018	mmHg	
Solubility in water	OPERA QSAR	378.5076	µg/L	
Solubility in water	TEST QSAR	9497.737	µg/L	
Bioconcentration factor	OPERA QSAR	10.8798	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	3973.9	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.99861	no units	
Henry's Law constant	OPERA QSAR	0.00000944	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Propargite
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
318	USEPA. 2019. Propargite: Draft Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2014-0131-0051. DP No. D449759. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
368	USEPA. 2021. Propargite: Revised Draft Human Health Risk Assessment in Support of Registration Review. EPA-HQ-OPP-2014-0131-0068. DP No. D460581. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propetamphos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propetamphos
CASRN:	31218-83-4
DTXSID:	DTXSID7032470
Use:	Insecticide; Control of household and public health pets (esp cockroaches, flies, fleas, mosquitoes, clothes moths, ants, and animal ectoparasites).
Chemical Notes:	Canceled pesticide. Last end of use date: 3/30/2012.

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0023

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	4	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3	decreased brain, red blood cell, and plasma cholinesterase	general population	OPP 2001

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.007	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propetamphos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0005	mg/kg/day	OPP 2001	Stoll et al. 1982	decreased brain, red blood cell, and plasma cholinesterase	general population	0.0338	3	[198]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2001						[198]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.003	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0005	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.003	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	119	mg/kg	NIH HSDB	max
LD50	59.5	mg/kg	NIH HSDB	min
LOAEL	0.59	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	21	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.05	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	21	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	14	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	0.165	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	59	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.083	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	28	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000995	mol/kg	TEST QSAR	
Ames mutagenicity test	0.123	no units	TEST QSAR	
Developmental toxin test	0.502	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propetamphos

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	329	1	Sites	0.3	0.007	0.007	0.007	0.007	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	101	0	Sites	0						
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	3	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000645	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.45882	days	
Boiling point	OPERA QSAR	299.884	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000143	mmHg	
Vapor pressure	TEST QSAR	0.00001	mmHg	
Solubility in water	OPERA QSAR	109928.3526	µg/L	
Solubility in water	TEST QSAR	138734.7779	µg/L	
Bioconcentration factor	OPERA QSAR	7.51185	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	175.902	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.81558	no units	
Henry's Law constant	OPERA QSAR	3.82E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Propetamphos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
198	USEPA. 2001. Propetamphos. Revised Human Health Risk Assessment. EPA-HQ-OPP-2007-1195-0013. DP No. D272377. U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propiconazole

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propiconazole
CASRN:	60207-90-1
DTXSID:	DTXSID8024280
Use:	Fungicide
Chemical Notes:	This CIS also contains some data for the following: Cis-propiconazole; trans-propiconazole

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.000036

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1100	Based on liver lesions (vacuolation of hepatocytes in males, ballooned cells in the liver of males, and foci of enlarged hepatocytes in females), increased incidence of luminal dilation of the uterus in females, and reduced body weights in both males and females.	general population	OPP 2022

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0398	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propiconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.18	mg/kg/day	OPP 2022	MRID 00129918	Based on liver lesions (vacuolation of hepatocytes in males, ballooned cells in the liver of males, and foci of enlarged hepatocytes in females), increased incidence of luminal dilation of the uterus in females, and reduced body weights in both males and females.	general population	0.0338	1100	[134]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information (OPP 2022) has been published since that time and has been used to derive an updated HRL for propiconazole.
Cancer Classification (CC)	C		OPP 2022						[134]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	2	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.3	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For propiconazole
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For cis-propiconazole
Health-Based Screening Level	0.6	mg/l	Health-based screening levels from USGS	For trans-propiconazole

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1490	mg/kg	NIH HSDB	min
LD50	1517	mg/kg	NIH HSDB	max
LOAEL	8.4	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.9	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	31	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	461.73	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	6.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1.25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	461.73	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00405509	mol/kg	TEST QSAR	
Ames mutagenicity test	0.333	no units	TEST QSAR	
Developmental toxin test	0.484	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propiconazole

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4,216	246	Sites	6	0.00035	0.0095	0.0398	1.72	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	47	3114468	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	7	27,035

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	2	0.086	0.086	0.086	0.086	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	5	Sites	29	0.0057	0.0057	0.012	0.029	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	2	Sites	8	0.0141	0.0154	0.0165	0.0168	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	4,856	356	Sites	7	3e-04	0.0114	0.104	3.72	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	5	Sites	2	0.00566	0.0057	0.134	0.192	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	5	Sites	42	0.0057	0.01	0.0195	0.07	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	172	57	Sites	33	0.02	0.0343	0.182	3.37	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	16	0.0202	0.0644	0.271	0.405	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	902	6	Sites	0.67	0.0023	0.00845	0.0225	0.031	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	42	3	Samples	7				0.08	µg/L	trans-propiconazole
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	8	Sites	38	0.0181	0.0858	0.123	0.182	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000133	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.24505	days	
Boiling point	OPERA QSAR	350.142	degree C	
Boiling point	TEST QSAR	366.386	degree C	
Vapor pressure	OPERA QSAR	0.00000042	mmHg	
Vapor pressure	TEST QSAR	7.08E-08	mmHg	
Solubility in water	OPERA QSAR	121624.3036	µg/L	
Solubility in water	TEST QSAR	65811.98598	µg/L	
Bioconcentration factor	OPERA QSAR	45.7486	no units	
Bioconcentration factor	TEST QSAR	102.094	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2451.91	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.71704	no units	
Henry's Law constant	OPERA QSAR	0.00000383	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Propiconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
134	OPP. 2022. Propiconazole: Revised Human Health Draft Risk Assessment of the Conventional Uses to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D464253
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propoxur

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propoxur
CASRN:	114-26-1
DTXSID:	DTXSID7021948
Use:	Insecticide used on cane, cocoa, fruit grapes, maize, rice, sugar, vegetables, cotton, lucerne, and ornamentals, etc
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0035

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	reproductive and developmental effects	9	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2.5	Based on RBC AChE inhibition in male and female PND11 pups (combined).	children	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.00878	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propoxur

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00038	mg/kg/day	OPP 2015	Toot 2012a and b (MRID 48784802; 48784803)	Based on RBC AChE inhibition in male and female PND11 pups (combined).	children	0.15	2.5	[259]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)." "No chronic dietary endpoint has been selected. The acute dietary endpoint is the most sensitive non-cancer endpoint in the database, and therefore protective of all longer-term exposures."
Cancer Slope Factor (CSF)	0.00352	$(mg/kg/day)^{-1}$	OPP 2015	Suberg and Loeser 1984 (MRID 00142725)	urinary bladder papillomas and carcinomas in both sexes, and uterine carcinomas in high-dose females	general population	0.0338	8.41	[259]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	B2		OPP 2015						[259]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.04	mg/l	EPA DWSHA 2018	
Acute Human Health Benchmark	0.0025	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.00038	mg/kg/day	EPA HHBP	
Lifetime Health Advisory	0.003	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	23.5	mg/kg	NIH HSDB	min
LD50	800	mg/kg	NIH HSDB	max
LOAEL	1.75	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	2761.1	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.75	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	2761.1	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000988553	mol/kg	TEST QSAR	
Ames mutagenicity test	0.614	no units	TEST QSAR	
Developmental toxin test	0.684	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propoxur

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,520	246	Sites	3	0.00021	0.00247	0.00878	0.454	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	0	2016

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	0.2

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	105	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	227	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	868	0	Sites	0						
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	373	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	6,345	151	Sites	2	0.00024	0.004	0.0223	1.8	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	1	Sites	0.46	0.005	0.005	0.005	0.005	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	255	0	Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	2	Sites	5	0.0093	0.0095	0.00966	0.0097	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	3	Sites	0.43	0.0014	0.0029	0.0033	0.0034	µg/L	
Southeast Stream Quality Assessment (SESQA) (Ambient) [399]	2014	77	29	Sites	38	0.000331	0.00197	0.00616	0.0126	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	1	Samples	0.8				0.007	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		7.32E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.64523	days	
Boiling point	OPERA QSAR	287.594	degree C	
Boiling point	TEST QSAR	285.351	degree C	
Vapor pressure	OPERA QSAR	0.00000966	mmHg	
Vapor pressure	TEST QSAR	0.0000306	mmHg	
Solubility in water	OPERA QSAR	1858221.147	µg/L	
Solubility in water	TEST QSAR	528025.5726	µg/L	
Bioconcentration factor	OPERA QSAR	8.30227	no units	
Bioconcentration factor	TEST QSAR	4.9545	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	46.9061	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.52408	no units	
Henry's Law constant	OPERA QSAR	1.42E-09	atm-m^3/mol	

Propoxur

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
259	USEPA. 2015. Propoxur: Human Health Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2009-0806-0023. DP No. D414135. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
399	USGS. n.d. Southeast Stream Quality Assessment (SESQA). https://pubs.usgs.gov/publication/fs20143023
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Propyzamide

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Propyzamide
CASRN:	23950-58-5
DTXSID:	DTXSID2020420
Use:	Selective herbicide used on annual and perennial grasses
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00083

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	8	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	77	Based on the increase in landing foot splay in female rats and the decrease in motor activity in both sexes on Day 1.	general population	OPP 2021; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0641	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Propyzamide

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.013	mg/kg/day	OPP 2021; OPP 2019	MRIDs: 48599202; 48599204; 41714001; 41714002; 48688001	Based on the increase in landing foot splay in female rats and the decrease in motor activity in both sexes on Day 1.	general population	0.0338	77	[367]; [320]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	NL		OPP 2021; OPP 2019						[367]; [320]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.8	mg/l	EPA DWSHA 2018	
Acute Human Health Benchmark	0.3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.04	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	
Lifetime Health Advisory	0.001	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5600	mg/kg	NIH HSDB	min
LD50	8350	mg/kg	NIH HSDB	max
LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	375	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	375	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	11	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	289.2	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	60	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	12.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	289.2	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00706318	mol/kg	TEST QSAR	
Ames mutagenicity test	0.667	no units	TEST QSAR	
Developmental toxin test	0.574	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Propyzamide
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,567	151	Sites	1	0.00047	0.00986	0.0641	8.83	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	4	162699	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	0.014

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	1	Sites	2	0.005	0.005	0.005	0.005	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,458	130	Sites	1	0.00021	0.015	0.155	5.75	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	2	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	6	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	82	4	Sites	5	0.005	0.017	0.0668	0.25	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.113	0.113	0.113	0.113	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	1	Samples	0.8				0.014	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000132	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.31044	days	
Boiling point	OPERA QSAR	312.445	degree C	
Boiling point	TEST QSAR	339.245	degree C	
Vapor pressure	OPERA QSAR	0.000000436	mmHg	
Vapor pressure	TEST QSAR	0.00000364	mmHg	
Solubility in water	OPERA QSAR	12780.887	µg/L	
Solubility in water	TEST QSAR	43297.23972	µg/L	
Bioconcentration factor	OPERA QSAR	69.4172	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	203.736	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.42858	no units	
Henry's Law constant	OPERA QSAR	4.22E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Propyzamide
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
320	USEPA. 2019. Propyzamide/Pronamide: Section 18 Request for Use on Cranberries in Massachusetts. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D450008.
367	USEPA. 2021. Pronamide. Revised Human Health Draft Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D461344.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Prosulfuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Prosulfuron
CASRN:	94125-34-5
DTXSID:	DTXSID9034868
Use:	Post-emergent herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00036

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	5	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	310	Based on decreased feed efficiency, hematological findings and hepatotoxicity in both sexes.	general population	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.112	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Prosulfuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.053	mg/kg/day	OPP 2015	MRID: 42685230 (1992)	Based on decreased feed efficiency, hematological findings and hepatotoxicity in both sexes.	general population	0.0338	310	[260]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	NL		OPP 2015						[260]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.1	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.34	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	546	mg/kg	NIH HSDB	min
LOAEL	1062	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	18.6	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1.84	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1062	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic LOAEL	31	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1400	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.01	mg/kg/day	EPA Toxicity Reference Database	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0170608	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	1.087	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Prosulfuron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,169	13	Sites	0.6	0.001	0.0071	0.112	0.304	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	24	19132	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	8	1	Sites	12	0.0025	0.0025	0.0025	0.0025	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,384	10	Sites	0.72	7e-04	0.0106	0.0209	0.0439	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	113	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	1	Sites	12	0.0025	0.0025	0.0025	0.0025	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	0	Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000116	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	<LOD	µg/l	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.68618	days	
Boiling point	OPERA QSAR	264.576	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	1.14E-11	mmHg	
Vapor pressure	TEST QSAR	5.45E-11	mmHg	
Solubility in water	OPERA QSAR	341269.2169	µg/L	
Solubility in water	TEST QSAR	43813.46736	µg/L	
Bioconcentration factor	OPERA QSAR	2.59172	no units	
Bioconcentration factor	TEST QSAR	1.15345	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	75.0078	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.89079	no units	
Henry's Law constant	OPERA QSAR	2.47E-11	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Prosulfuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
260	USEPA. 2015. Prosulfuron. Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D426092.

Pyraclostrobin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Pyraclostrobin
CASRN:	175013-18-0
DTXSID:	DTXSID7032638
Use:	Very broad spectrum fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000047

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	9	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	Based on decreased body weight, kidney tubular casts and atrophy in both sexes; increased incidence of liver necrosis and erosion/ulceration of the glandular-stomach and fore-stomach in males.	general population	OPP 2023; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.00945	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Pyraclostrobin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.034	mg/kg/day	OPP 2023; OPP 2019	MRID: 45118331	Based on decreased body weight, kidney tubular casts and atrophy in both sexes; increased incidence of liver necrosis and erosion/ulceration of the glandular-stomach and fore-stomach in males.	general population	0.0338	200	[390]; [321]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer (2023) OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	NL		OPP 2023; OPP 2019						[390]; [321]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.05	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.1	mg/l	MN DOH	Short-term value based on developmental, female reproductive system, gastrointestinal system, and spleen
Acute/Short-term Health-Based Guidance Value	0.3	mg/l	MN DOH	Acute value based on developmental, female reproductive system
Chronic Health-Based Guidance Value	0.1	mg/l	MN DOH	
Health-Based Screening Level	0.22	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.1	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	
LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	9.2	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	25	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.4	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	40	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	10.8	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	634.8	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	5.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	634.8	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.587	no units	TEST QSAR	
Developmental toxin test	0.41	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Pyraclostrobin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,260	119	Sites	5	0.00011	0.00196	0.00945	3.33	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	47	2265884	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,022	132	Sites	7	0.00013	0.00226	0.02	1.39	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	112	20	Sites	18	0.02	0.075	0.242	99	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0383	0.0383	0.0383	0.0383	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	1	Sites	0.17	2e-04	2e-04	2e-04	2e-04	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000148	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.15004	days	
Boiling point	OPERA QSAR	335.991	degree C	
Boiling point	TEST QSAR	465.144	degree C	
Vapor pressure	OPERA QSAR	8.48E-09	mmHg	
Vapor pressure	TEST QSAR	1.5E-09	mmHg	
Solubility in water	OPERA QSAR	1904.1962	µg/L	
Solubility in water	TEST QSAR	8105.438	µg/L	
Bioconcentration factor	OPERA QSAR	174.446	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1622.29	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.98987	no units	
Henry's Law constant	OPERA QSAR	0.000000149	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Pyraclostrobin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
321	USEPA. 2019. Pyraclostrobin. Registration Review Human Health Draft Risk Assessment. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D448674.
390	USEPA. 2023. Pyraclostrobin. Human Health Risk Assessment of Proposed Tolerances and Uses on Coffee, Green Bean; Stevia, Dried Leaves; and Stevia, Fresh Leaves. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D464837.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Pyrene

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Pyrene
CASRN:	129-00-0
DTXSID:	DTXSID3024289
Use:	Occurs as a result of incomplete burning
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00033

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	150	nephropathy (renal tubular pathology, decreased kidney weights)	general population	OW 1991

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.05	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Pyrene

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.03	mg/kg/day	IRIS 1990	USEPA 1989	renal tubular pathology, decreased kidney weights	general population	0.0338	200	[172]	
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	OW 1991	USEPA 1989	nephropathy (renal tubular pathology, decreased kidney weights)	general population	0.0338	150	[178]	
Cancer Classification (CC)	NL		PPRTV 2007						[220]	NL = Not likely to be carcinogenic to humans
Cancer Classification (CC)	D		IRIS 1990						[172]	D = Not classifiable as to human carcinogenicity
			ATSDR 1995						[6]	Note: No acute or chronic oral minimal risk level (MRL) (RfD equivalent) "were derived for PAHs because there are no adequate human or animal dose-response data available that identify threshold levels for appropriate noncancer health effects"
			WHO 2003						[408]	Note: No guideline value derived for pyrene.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Reproductive	0.0075	Paltaviciene, 2006	Reproductive	0.00075	Paltaviciene, 2006	9/1/2006	3/25/2020	6765	2	16	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	0.05	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	0.02	mg/l	EPA Human Health Criteria for CWA	
Provisional Subchronic RfD	0.3	mg/kg/day	EPA PPRTV	
Subchronic Health-Based Guidance Value	0.09	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2700	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00704693	mol/kg	TEST QSAR	
Ames mutagenicity test	0.842	no units	TEST QSAR	
Developmental toxin test	0.342	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Pyrene

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	587	63	Sites	11	0.003	0.02	0.05	0.42	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	28	1	Sites	4	0.001	0.001	0.001	0.001	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	481	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	231	8	Sites	3	0.1	0.16	0.28	0.3	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	634	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,070	837	Sites	17	0.001	0.04	2	170	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	14	Sites	37	0.0034	0.0092	0.0242	0.0447	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95	0.01	1.25	7.45	29.1	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	5	Sites	24						

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000714	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	237.283	days	
Boiling point	OPERA QSAR	393.972	degree C	
Boiling point	TEST QSAR	415.21	degree C	
Vapor pressure	OPERA QSAR	0.00000448	mmHg	
Vapor pressure	TEST QSAR	8.69E-08	mmHg	
Solubility in water	OPERA QSAR	146.028832	µg/L	
Solubility in water	TEST QSAR	24.472976	µg/L	
Bioconcentration factor	OPERA QSAR	1557.35	no units	
Bioconcentration factor	TEST QSAR	529.663	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	79473.2	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.88312	no units	
Henry's Law constant	OPERA QSAR	0.0000119	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Pyrene

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
6	ATSDR. 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
172	USEPA. 1990. Chemical Assessment Summary, Pyrene. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
178	USEPA. 1991. Drinking Water Criteria Document for Polycyclic Aromatic Hydrocarbons (PAHs). U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH.
220	USEPA. 2007. Provisional Peer-Reviewed Toxicity Values for Pyrene. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
408	WHO. 2003. Polynuclear aromatic hydrocarbons in Drinking-water Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Quinoline

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Quinoline
CASRN:	91-22-5
DTXSID:	DTXSID1021798
Use:	Chemical intermediate; pharmaceutical (anti-malarial); flavoring
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	9.1

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	carcinogen with linear MOA	8	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.01	hepatic hemangioendotheliomas or hemangiosarcomas	general population	IRIS 2001

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0912	90th Percentile	Finished Water	UCMR 4	2018 - 2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Quinoline

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Cancer Slope Factor (CSF)	3	$(mg/kg/day)^{-1}$	IRIS 2001	Hirao et al. 1976	hepatic hemangioendotheliomas or hemangiosarcomas	general population	0.0338	0.01	[196]	
Cancer Classification (CC)	B2		IRIS 2001						[196]	B2 = Probable human carcinogen with sufficient evidence (i.e., indicative of a causal relationship) from animal bioassay data but with little or no human data

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Renal, Immune, Hepatic, Carcinogenicity, Systemic	8.8	Matsumoto, 2018	Hepatic	30	Uno, 2015	7/1/2005	3/16/2020	2041	2	2	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.004	mg/l	MN DOH	Chronic value for blood system, liver system, kidney system, respiratory system, and spleen
Chronic Health-Based Guidance Value	0.000003	mg/l	MN DOH	Chronic value for cancer
Cancer Classification (CC)	2B	no units	WHO IARC	2B = Possibly carcinogenic to humans

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	331	mg/kg	NIH HSDB	min
LD50	460	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00465586	mol/kg	TEST QSAR	
Ames mutagenicity test	0.888	no units	TEST QSAR	
Developmental toxin test	0.468	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Quinoline

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020	5,030	76	Sites	2	0.0201	0.0286	0.0912	1.5	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	7	16,213

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	628500

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000375	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	13.7434	days	
Boiling point	OPERA QSAR	237.234	degree C	
Boiling point	TEST QSAR	239.117	degree C	
Vapor pressure	OPERA QSAR	0.0595784	mmHg	
Vapor pressure	TEST QSAR	0.0293765	mmHg	
Solubility in water	OPERA QSAR	6197011.933	µg/L	
Solubility in water	TEST QSAR	4179604.823	µg/L	
Bioconcentration factor	OPERA QSAR	3.81323	no units	
Bioconcentration factor	TEST QSAR	17.1396	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1254.8	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.03132	no units	
Henry's Law constant	OPERA QSAR	0.00000866	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Quinoline

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
196	USEPA. 2001. Chemical Assessment Summary, Quinoline. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
CASRN:	121-82-4
DTXSID:	DTXSID9024142
Use:	High explosive
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	2.8

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	1	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.4	liver and lung tumors in female mice	general population	IRIS 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.1	90th Percentile	Finished Water	UCMR 2	2008-2010

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	X

Basis

The EPA made a negative regulatory determination on RDX in RD 4 (2021). The EPA evaluated that RDX did not occur with a frequency and at levels of public health concern, and as a result, an NPDWR did not present a meaningful opportunity for health risk reduction.
- No detections above the non-cancer HRL or the 1/2 the non-cancer HRL in UCMR 2 monitoring
- RD 4 HRL based on non-carcinogenic effects = 30 µg/L
- RD 4 HRL based on carcinogenicity = 0.4 µg/LThe MRL of 1 µg/L was higher than the cancer HRL of 0.4 µg/L. Based on the small number of samples measured at or marginally above the MRL, EPA did not believe that there would be enough occurrence in the narrow range between the HRL and the MRL to change the meaningful opportunity determination.

USEPA, 2021 [354]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	ATSDR 2012	U.S. Army 1983	convulsions/seizures observed in rats	general population	0.0338	600	[22]	
Reference Dose (RfD) or Equivalent	0.004	mg/kg/day	HC 2020	Crouse et al. 2006	incidence of convulsions using the combined incidence data from male and female rats	general population	0.0338	20	[82]	
Reference Dose (RfD) or Equivalent	0.004	mg/kg/day	IRIS 2018	Crouse et al. 2006	Nervous system effects (convulsions) in rats	general population	0.0338	20	[301]	Note: Study is subchronic in duration but a subchronic to chronic uncertainity factor of 1X was applied based on evidence that nervous system effects are more strongly driven by dose than duration of exposure. The assessment therefore states that the RfD may be appropriate for assessing health risks of less-than-lifetime as well as chronic durations of exposure.
Cancer Slope Factor (CSF)	0.08	$(mg/kg/day)^{-1}$	IRIS 2018	Lish et al. 1984	liver and lung tumors in female mice	general population	0.0338	0.4	[301]	
Cancer Classification (CC)	S		IRIS 2018						[301]	S = Suggestive evidence for carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (ug/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						11/1/2019	7/23/2024	97	1	4	0

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.1	mg/l	EPA DWSHA 2018	
Acute Minimal Risk Level (MRL)	0.2	mg/kg/day	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.1	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	0.0003	mg/l	EPA DWSHA 2018	10^{-6} cancer risk value
Lifetime Health Advisory	0.002	mg/l	EPA DWSHA 2018	Non-cancer lifetime health advisory

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	100	mg/kg	NIH HSDB	max
LD50	59	mg/kg	NIH HSDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010	4,139	3	Sites	0.07	1	1.07	1.1	1.1	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	6245623

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	26	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	31	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	169	48	Sites	28	0.03	24	61.4	310	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000378	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.07594	days	
Boiling point	OPERA QSAR	255.577	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	4.12E-09	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	60065.10126	µg/L	
Solubility in water	TEST QSAR	233658.1993	µg/L	
Bioconcentration factor	OPERA QSAR	1.9934	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	38.4638	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.868569	no units	
Henry's Law constant	OPERA QSAR	0.00000269	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
22	ATSDR. 2012. Toxicological Profile for RDX. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
82	HC. 2020. Drinking water screening value for hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) – Technical summary. Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
301	USEPA. 2018. Toxicological Review of Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (CASRN 121-82-4). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.
354	USEPA. 2021. Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List. Federal Register. 86 FR 12272, March 3, 2021.

Silica

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Silica
CASRN:	7631-86-9
DTXSID:	DTXSID1029677
Use:	Major constituent of the sand used for water treatment
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
29400	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Silica

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			OPP 2008, OPP 1991						[179]	Note: The 2018 OPP assessment refers back to the 1991 OPP RED. Neither provide an RfD for silica with the 1991 RED stating, "[d]ietary exposure from the direct application to food commodities or from inadvertent residues in food handling and preparation areas are not quantified here but are believed to be insignificant from a a toxicological standpoint." The 2018 HED Registration Review Scoping Document points out that no new data have been submitted since the 1991 RED.
			ATSDR 2019						[29]	Note: ATSDR assessment states there is insufficient data for [oral] MRL derivation.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
			ECHA 2009						[53]	Note: States no hazard identified.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Reference Concentration (RfC)	3	$\mu g/m^3$	CalEPA OEHHA Chemical Database	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Silica

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,207	11204	Sites	100	27	10000	29400	105000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	5	Sites	100	4300	8660	11400	13600	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	51	51	Sites	100	936	13800	35800	59900	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	5		Sites			11200	12400		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	49,281	49223	Sites	100	6	8600	29000	8e+07	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	757	Sites	100	1700	18300	45600	87100	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	13,735	13733	Samples	100	70	13000	38000	630000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	3,977	3708	Samples	93	180	20000	95000	5560000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	12	12	Sites	100	1000	6200	9300	22000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	1	1	Sites	100	9540	19900	28300	29500	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	238	238	Samples	100	6870	52000	97300	227000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Silica

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
29	ATSDR. 2019. Toxicological Profile for Silica. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
53	ECHA. 2009. Registration Dossier for Silicon Dioxide. European Chemicals Agency (ECHA), Helsinki, Finland. https://chem.echa.europa.eu/100.028.678/dossier-view/f45e0594-0618-4fda-bfd0-8108096d5ea1/0ccaf48e-d9d1-4352-91f1-04f7ae431e94_c9ab84d6-58ac-4ac8-a828-eaf539751f78?searchText=7631-86-9. Accessed 8/28/2024.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
179	USEPA. 1991. REREGISTRATION ELIGIBILITY DOCUMENT SILICON DIOXIDE AND SILICA GEL. U.S. Environmental Protection Agency, Office of Pesticide Programs, Washington, D.C.

Silicon

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Silicon
CASRN:	7440-21-3
DTXSID:	DTXSID0051441
Use:	Chemical intermediate; alloys
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
		10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
42069	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Silicon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
			IOM 2001						[95]	Note: There is no evidence that silicon that occurs naturally in food and water produces adverse health effects.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3160	mg/kg	NIH HSDB	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Silicon
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	989	Sites	100	260	18100	42100	98900	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		2930		22300	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			5280	5280		µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	383	379	Sites	99	2	3480	5990	61000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		2750		22400	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	421	2250	7080	11900	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	9	9	Sites	100	1100	2400	5480	7400	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	1	1	Sites	100	4500	9280	13200	13800	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	166	156	Samples	94	400	12500	44200	164000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Silicon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
95	IOM. 2001. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Food and Nutrition Board, Institute of Medicine, National Academies. National Academy Press, Institute of Medicine (IOM), Washington, DC.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.

Silver

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Silver
CASRN:	7440-22-4
DTXSID:	DTXSID4024305
Use:	Transition metal
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	100

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	cosmetic effects	6	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	30	based on generalized argyria following intravenous silver arsphenamine injection therapy; the critical effect in humans ingesting silver is argyria, a medically benign but permanent bluish-gray discoloration of the skin.	general population	IRIS 1991

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
3014	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Silver

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.005	mg/kg/day	IRIS 1991	Gaul and Staud 1935	based on generalized argyria following intravenous silver arsphenamine injection therapy; the critical effect in humans ingesting silver is argyria, a medically benign but permanent bluish-gray discoloration of the skin.	general population	0.0338	30	[174]	
Reference Dose (RfD) or Equivalent			WHO 2021						[420]	Note: data inappropriate for deriving a formal guideline value. Further, a formal guideline value is considered unnecessary because the contribution of drinking-water to the NOAEL will normally be negligible, and WHO does not recommend use of silver for disinfection of drinking-water (including point-of use-water treatment devices)
Reference Dose (RfD) or Equivalent			HC 1986						[74]	Note: A maximum acceptable concentration is not specified for silver.
Reference Dose (RfD) or Equivalent			ATSDR 1990						[3]	Note: No reference dose or equivalent identified in the assessment.
Reference Dose (RfD) or Equivalent			EFSA 2021						[69]	Based on the above-mentioned data, the Panel concluded that under the intended and tested conditions of uses, the particles of the additive silver nanoparticles stay embedded in the polymer, do not migrate and resist release by abrasion, thus, do not give rise to exposure via food and to toxicological concern. T; EFSA CEP Panel (EFSA Panel on Food Contact Materials, Enzymes and Processing Aids), Lambre C, Barat Baviera JM, Bolognesi C, Chesson A, Cocconcelli PS, Crebelli R, Gott DM, Grob K, Lampi E, Mengelers M, Mortensen A, Steffensen I-L, Tlustos C, Van Loveren H, Vernis L, Zorn H, Castle L, Di Consiglio E, Franz R, Hellwig N, Merkel S, Milana MR, Barthel emy E and Rivi ere G, 2021. Scientific Opinion on the safety assessment of the substance silver nanoparticles for use in food contact materials. EFSA Journal 2021;19(8): 6790, 11 pp. https://doi.org/10.2903/j.efsa.2021.6 79
Cancer Classification (CC)	D		IRIS 1991						[174]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						7/1/2020	9/4/2024	14,183			

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.2	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	0.03	mg/l	MN DOH	
Lifetime Health Advisory	0.1	mg/l	EPA DWSHA 2018	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Silver

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	8	Sites	0.81	12	19	3010	10000	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,363	280	Sites	4	0.004	0.0295	3	19	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 – <50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	27	1	Sites	4	0.022	0.022	0.022	0.022	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	2		Sites							
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	22,888	2854	Sites	12	0.003	0.26	5	882	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	46	Sites	6	0.005	0.007	0.021	0.171	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	1,830	1775	Samples	97	0.01	2	10	35000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	224	115	Samples	51	0.5	50	50	4900	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
EPA Ash Database (Wastewater)	1973 - 2014	60	11	Sites	18	0.0246	0.33	10	30	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	0	Sites	0						
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	4	Sites	50	0.2	7.5	21.9	41.4	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	21	Sites	54	0.003	0.053	1	180	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Silver

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Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
3	ATSDR. 1990. Toxicological Profile for Silver. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
69	European Food Safety Authority (EFSA). 2021. Scientific Opinion on Safety assessment of the substance silver nanoparticles for use in food contact materials evaluated by EFSA in EFSA Journal 2021;19(8):6790. ADOPTED: 6 July 202EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids, European Food Safety Authority (EFSA), Parma, Italy.
74	HC. 1986. Silver. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
174	USEPA. 1991. Chemical Assessment Summary Silver; CASRN 7440-22-4. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC.
420	WHO. 2021. Silver in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Sodium

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Sodium
CASRN:	7440-23-5
DTXSID:	DTXSID1049774
Use:	Chemical intermediate; alloys; semiconductors
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	8

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
	non-cancer effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	20000	organoleptic effects, risk to adults under strict low-sodium diets	general population	OW 2003

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
160240	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X				

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
X	Not Applicable	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination for sodium in RD 1 (2003). The EPA identified that regulation of sodium in drinking water was unlikely to represent a meaningful opportunity for health risk reduction based on, among other information, that drinking water is only a minor source of dietary sodium intake compared with food. The EPA determined the most effective means to protect the health of PWS users is via dietary guidance provided to sensitive groups by the public health community.

USEPA , 2001 [149]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Sodium
CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	6.25	mg/kg/day	HC 1992	WHO 1984	organoleptic effects, risk to adults under strict low-sodium diets	general population	0.0338	37000	[79]	Note: sodium is not considered toxic, this HRL is only relevant to individuals who are on restricted sodium diets. EPA states that organoleptic effects could occur at levels of sodium in drinking water of 20 mg/L. Also, cancer was not evaluated.
Reference Dose (RfD) or Equivalent			OW 2003	USEPA 1996	organoleptic effects, risk to adults under strict low-sodium diets	general population	0.0338	20000	[205]	Note: Public Water Systems that exceed 20 mg/L must notify local state public health officials as mandated by EPA. Also, cancer was not evaluated.
Reference Dose (RfD) or Equivalent			WHO 2003						[409]	Note: On the basis of existing data, no firm conclusions can be drawn concerning the possible association between sodium in drinking-water and the occurrence of hypertension. No health-based guideline value is therefore proposed. However, sodium may affect the taste of drinking-water at levels above about 200 mg/litre.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	2300	mg/kg/day	IOM 2005	Johnson et al. 2001; MacGregor et al. 1989; Sacks et al. 2001	increased blood pressure	lactating women	0.0469	9800000	[96]	Note: Tolerable Upper Intake Level for lactating women listed as RfD
Reference Dose (RfD) or Equivalent	2300	mg/kg/day	IOM 2005	Johnson et al. 2001; MacGregor et al. 1989; Sacks et al. 2001	hypertensive disorders	pregnant women	0.0333	14000000	[96]	Note: Tolerable Upper Intake Level for pregnant women listed as RfD
Reference Dose (RfD) or Equivalent	2300	mg/kg/day	IOM 2005	Johnson et al. 2001; MacGregor et al. 1989; Sacks et al. 2001	increased blood pressure	general population	0.0338	14000000	[96]	Note: Tolerable Upper Intake Level for the general population listed as RfD
Reference Dose (RfD) or Equivalent	2300	mg/kg/day	IOM 2005	Johnson et al. 2001; MacGregor et al. 1989; Sacks et al. 2001	increased blood pressure	females of reproductive age	0.0354	13000000	[96]	Note: Tolerable Upper Intake Level for females of reproductive age listed as RfD

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Maximum Allowable Concentration (MAC)	None	mg/l	Canadian Drinking Water Guidelines	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Sodium

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	989	Sites	100	907	16400	160000	1540000	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	11,563	11562	Sites	100	70	13200	85000	1.9e+07	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	50,000,000 - 100,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	5	5	Sites	100	5470	67900	132000	157000	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	589	588	Sites	100	500	50000	103000	3.7e+07	µg/L	
Drinking Water Monitoring Data - DC (Finished)	2008 - 2009	1	1	Sites	100	10000	15500	19300	22000	µg/L	
Drinking Water Monitoring Data - MA (Finished)	2006 - 2020	1,778	1777	Sites	100	190	23000	88300	5100000	µg/L	
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	936	893	Sites	95	710	9800	37240	830000	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	147	147	Sites	100	170	8800	96700	3240000	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		27800		128000	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	27		Sites			19500	83000		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	5,409	5400	Sites	100	400	35000	120000	204000000	µg/L	
Drinking Water Monitoring Data - FL (Ambient)	2006 - 2011	105	100	Sites	95	7	9170	80900	860000	µg/L	
Drinking Water Monitoring Data - MA (Ambient)	2006 - 2020	159	159	Sites	100	2600	49000	197000	4100000	µg/L	
Drinking Water Monitoring Data - PA (Ambient)	2006 - 2011	1	1	Sites	100	18900	18900	18900	18900	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	1,498	1303	Sites	87	700	8900	37400	950000	µg/L	
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	142	141	Sites	99	450	6500	36000	210000	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	56,299	56143	Sites	100	0.844	13500	155000	7.25e+08	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		24000		128000	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	758	757	Sites	100	450	15800	164000	682000	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	91	1100	8570	49421	95900	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	15,299	15299	Samples	100	100	585000	3300000	1.21e+08	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	96,501	96432	Samples	100	100	13500000	71800000	434000000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	22	22	Sites	100	1700	25700	41500	1010000	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	1750	36900	496000	2660000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	7	7	Sites	100	13200	45500	360000	690000	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	444	444	Samples	100	2330	315000	48100000	97900000	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	39	Sites	100	753	75400	790700	3750000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Sodium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
79	HC. 1992. Guideline Technical Document - Sodium. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
96	IOM. 2005. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Institute of Medicine (IOM), National Academy of Science, Washington, D.C.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
149	USEPA, 2001. Regulatory Determination Support Document for Sodium. EPA 815 R-01-014.
205	USEPA. 2003. Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Sodium. U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division, Washington, D.C.
409	WHO. 2003. Sodium in Drinking-water: Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.
a	USEPA. 2003. Contaminant Candidate List Regulatory Determination Support Document for Sodium. U.S Environmental Protection Agency, Office of Water, Standards and Risk Management Divison, Washington, D.C.

Strontium

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Strontium
CASRN:	7440-24-6
DTXSID:	DTXSID3024312
Use:	Use data are for strontium carbonate: In pyrotechnics; steel production; catalyst; lead scavenger; naturally-occurring
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.39

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	reproductive and developmental effects	10	10

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1980	calcification defects (decreased bone mineralization) in young rats	all infants	HC 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
765	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
		X		

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Strontium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.6	mg/kg/day	IRIS 1992	Storey 1961; Marie et al. 1985; Skoryna 1981	calcification defects (Rachitic bone)	all infants	0.143	800	[183]	
Reference Dose (RfD) or Equivalent	1.417	mg/kg/day	HC 2019	Marie et al. 1985	calcification defects (decreased bone mineralization) in young rats	all infants	0.143	1980	[81]	NOTE: uses BMD modeling and there is a 2014 draft OW health effects support document that went out with Reg Det 3 and the numbers from that doc and the HC assessment are essentially the same
Reference Dose (RfD) or Equivalent	0.5	mg/kg/day	OW 1991	McCaslin and Janes 1959	no adverse effects in adult patients with postmenopausal osteoporosis	general population	0.0338	3000	[180]	
Cancer Classification (CC)	D		OW 1991						[180]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						5/1/2018	7/17/2024	1245	2	131	0

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	25	mg/l	EPA DWSHA 2018	
Acute/Short-term Health-Based Guidance Value	3	mg/l	MN DOH	
Chronic Health-Based Guidance Value	3	mg/l	MN DOH	
Intermediate Minimal Risk Level (MRL)	2	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	4	mg/l	EPA DWSHA 2018	
Maximum Allowable Concentration (MAC)	7	mg/l	Canadian Drinking Water Guidelines	
Subchronic Health-Based Guidance Value	3	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Strontium
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,922	4922	Sites	100	0.3	148	765	62000	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	980	Sites	99	2	178	1080	43600	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	6,168	6160	Sites	100	0.15	176	958	32000	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	<1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	2	Sites	100	1.47	95.7	171	190	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	57	54	Sites	95	0.2	96	918	5600	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	25	Sites	96	4.91	130	333	1980	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	100		178		1000	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			330	330		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - WI (Ambient)	2006 - 2020	1	1	Sites	100	137	137	137	137	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	25,142	25012	Sites	99	0.011	181	1200	2250000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	100		177		1010	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	757	Sites	100	0.86	166	913	11300	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	9.65	52.5	174	493	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	7,361	7359	Samples	100	0.04	3970	29000	1.11e+08	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	8,460	7812	Samples	92	1	156000	1370000	29200000	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	14	14	Sites	100	27	400	450	1680	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	1e+05	555000	1500000	4080000	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	414	412	Samples	100	0.505	1050	856000	4370000	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	235	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Strontium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
81	HC. 2019. Guideline Technical Document - Strontium. Guidelines for Canadian Drinking Water Quality. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
180	USEPA. 1991. Strontium Drinking Water Health Advisory. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
183	USEPA. 1992. Chemical Assessment Summary, Strontium. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, D.C.

Sulfentrazone

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Sulfentrazone
CASRN:	122836-35-5
DTXSID:	DTXSID6032645
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00018

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reduced longevity	10	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	830	reduced prenatal viability (fetal and litter), reduced litter size, increased number of stillborn pups, reduced pup and litter postnatal survival, decreased pup body weights throughout lactation	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.152	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Sulfentrazone

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	OPP 2018	Ponnock 1994	reduced prenatal viability (fetal and litter), reduced litter size, increased number of stillborn pups, reduced pup and litter postnatal survival, decreased pup body weights throughout lactation	general population	0.0338	830	[299]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	NL		OPP 2018						[299]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	4	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.14	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.9	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2855	mg/kg	NIH HSDB	
LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	407.1	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	407.1	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	4	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	57	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	534.9	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	19.9	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	534.9	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00122744	mol/kg	TEST QSAR	
Ames mutagenicity test	0.709	no units	TEST QSAR	
Developmental toxin test	1.271	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Sulfentrazone

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,258	245	Sites	11	0.00055	0.0204	0.152	4.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	40	3378302	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,714	254	Sites	15	0.00061	0.0282	0.199	4.1	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	6	Sites	1	0.0015	0.007	0.109	0.199	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000149	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.69031	days	
Boiling point	OPERA QSAR	342.438	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	9.73E-10	mmHg	
Vapor pressure	TEST QSAR	2.59E-08	mmHg	
Solubility in water	OPERA QSAR	771115.4316	µg/L	
Solubility in water	TEST QSAR	48519.07452	µg/L	
Bioconcentration factor	OPERA QSAR	7.64343	no units	
Bioconcentration factor	TEST QSAR	6.91831	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	450.883	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.993599	no units	
Henry's Law constant	OPERA QSAR	9.35E-11	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Sulfentrazone

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
299	USEPA. 2018. Sulfentrazone - Human Health Risk Assessment for a Section 3 Registration Request to Add New Uses on Chia and Teff; an Amended Use on Mint; and Crop Group Conversions for Tree Nut Group 14-12, Stalk and Stem Vegetable Subgroup 22A; Vegetable, Brassica, Head and Stem, Group 5-16; and Brassica, Leafy Greens, Subgroup 4-16B. EPA-HQ-OPP-2017-0072-0009. DP No. D443993. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

TDCPP

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	TDCPP
CASRN:	13674-87-8
DTXSID:	DTXSID9026261
Use:	Flame-retardant in plastics and as a secondary plasticizer
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0012

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	100	renal tubule epithelial hyperplasia	general population	ATSDR 2012

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.12	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

TDCPP

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.02	mg/kg/day	ATSDR 2012	Stauffer Chemical Co. 1981	renal tubule epithelial hyperplasia	general population	0.0338	100	[21]	Note: Chronic oral MRL based on BMDL10 of 1.94 mg/kg/day with an uncertainty factor of 10 for animal to human extrapolation and an uncertainty factor of 10 for human variability.
Cancer Classification (CC)			ATSDR 2012						[21]	Note: Cancer not evaluated

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic	0.0026	Deng, 2018	Cardiovascular, Respiratory	500	Wang, 2019	9/1/2011	2/13/2020	233	5	8	5

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Chronic Health-Based Guidance Value	0.008	mg/l	MN DOH	Chronic value for kidney system, male reproductive system
Chronic Health-Based Guidance Value	0.009	mg/l	MN DOH	No longer exists on MN DOH site
Chronic Health-Based Guidance Value	0.00008	mg/l	MN DOH	Chronic value for cancer
Intermediate Minimal Risk Level (MRL)	0.05	mg/kg/day	CDC ATSDR	
Subchronic Health-Based Guidance Value	0.02	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1850	mg/kg	NIH HSDB	min
LD50	2670	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	29	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00452898	mol/kg	TEST QSAR	
Ames mutagenicity test	0.601	no units	TEST QSAR	
Developmental toxin test	0.546	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

TDCPP

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	566	57	Sites	10	0.01	0.06	0.12	0.52	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	3	Sites	6	0.01	0.04	0.064	0.08	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	1	Sites	14	0.02	0.055	0.06	0.06	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,214	759	Sites	24	0.01	0.08	0.25	14.9	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	12	Sites	32	0.11	0.336	0.501	0.583	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Maruya et al. 2016 (Ambient) [104]	2013	9	7	Sites	78	0.155	0.423	1.19	1.4	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	18	Sites	86	0.04	0.129	0.444	0.894	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	1	Sites	5				0.01	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	19	Sites	90	0.13	0.22	0.317	0.4	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000175	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.076	days	
Boiling point	OPERA QSAR	313.296	degree C	
Boiling point	TEST QSAR	373.105	degree C	
Vapor pressure	OPERA QSAR	0.00000526	mmHg	
Vapor pressure	TEST QSAR	0.0000164	mmHg	
Solubility in water	OPERA QSAR	7109.685	µg/L	
Solubility in water	TEST QSAR	37961.409	µg/L	
Bioconcentration factor	OPERA QSAR	12.0292	no units	
Bioconcentration factor	TEST QSAR	14.9279	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	344.97	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.65041	no units	
Henry's Law constant	OPERA QSAR	0.000000915	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

TDCPP

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
21	ATSDR. 2012. Toxicological Profile for Phosphate Ester Flame Retardants. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Tebupirimfos

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tebupirimfos
CASRN:	96182-53-5
DTXSID:	DTXSID1032482
Use:	Insecticide used on corn
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.065

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
8	reproductive and developmental effects	7	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.23	inhibition of red blood cell acetylcholinesterase (AChE) in pups on postnatal day (PND) 11	females of reproductive age	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.015	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tebupirimfos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.000041	mg/kg/day	OPP 2019	MRID 48172303	inhibition of red blood cell acetylcholinesterase (AChE) in pups on postnatal day (PND) 11	females of reproductive age	0.0354	0.23	[323]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) exists but does not contribute new data for HRL. Also, the RfD is based off a steady-state (ss) PAD. Justification from the assessment is as follows: Steady state description: steady state (SS) or maximal AChE inhibition which occurs around 2-3 weeks for OPs...is a specific exposure assessment conducted for OPs instead of the traditional short, intermediate, or chronic assessments. The SS assessment is protective of longer durations of exposure, including chronic.
Cancer Classification (CC)	NL		OPP 2019						[323]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.00105	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.000158	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.0001	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1.3	mg/kg	NIH HSDB	min
LD50	14	mg/kg	NIH HSDB	max
LOAEL	0.125	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	43.57	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.02	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	43.57	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	26	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	1	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	4.9	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	4.9	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.000277971	mol/kg	TEST QSAR	
Ames mutagenicity test	-0.032	no units	TEST QSAR	
Developmental toxin test	0.634	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Tebupirimfos

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,497	27	Sites	1.08	0.00029	0.00168	0.015	0.41	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	18	247787	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	1	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	0	Sites	0						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,035	41	Sites	2	3e-04	0.00141	0.00433	0.0341	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	1	Sites	0.17	3e-04	3e-04	3e-04	3e-04	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent			Prevalence					Magnitude			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000528	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.69118	days	
Boiling point	OPERA QSAR	343.127	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000377	mmHg	
Vapor pressure	TEST QSAR	0.0000449	mmHg	
Solubility in water	OPERA QSAR	5539.638	µg/L	
Solubility in water	TEST QSAR	13276.029	µg/L	
Bioconcentration factor	OPERA QSAR	33.0974	no units	
Bioconcentration factor	TEST QSAR	174.582	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	373.983	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.54339	no units	
Henry's Law constant	OPERA QSAR	0.000000459	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tebupirimfos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
323	USEPA. 2019. Tebupirimphos. Acute and Steady State Dietary (Food and Drinking Water) Exposure and Risk Assessments to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Tebuthiuron

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tebuthiuron
CASRN:	34014-18-1
DTXSID:	DTXSID3024316
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00021

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	10	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	Decreased body weight in F1 females (13%)	all infants	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.042	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tebuthiuron

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.14	mg/kg/day	OPP 2018	MRID 00090108	Decreased body weight in F1 females (13%)	all infants	0.143	200	[125]	
Cancer Classification (CC)	D		OPP 2018						[125]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	3	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.5	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	200	mg/kg	NIH HSDB	min
LD50	644	mg/kg	NIH HSDB	max
LOAEL	31	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	110	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	72	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00688652	mol/kg	TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test	0.583	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Tebuthiuron

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,575	1147	Sites	11	0.00011	0.008	0.042	17.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	7	4260	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	0	0

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	5	Sites	9	0.008	0.06	0.116	0.147	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	2	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	1	Sites	4	0.012	0.0125	0.0129	0.013	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	10	Sites	59	0.00035	0.001	0.0037	0.055	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**						**Magnitude**			
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,490	1153	Sites	9	0.00013	0.011	0.058	11.4	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	41	Sites	19	0.00035	0.0011	0.05	0.43	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	6	Sites	50	0.00035	0.001	0.0044	0.22	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	256	9	Sites	4	0.021	0.07	1.3	3	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	3	Sites	8	0.0125	0.015	0.0316	0.0358	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	24	Sites	3	5e-04	0.0026	0.0145	0.0317	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	134	6	Samples	4				3.47	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000391	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.69326	days	
Boiling point	OPERA QSAR	323.037	degree C	
Boiling point	TEST QSAR	340.382	degree C	
Vapor pressure	OPERA QSAR	0.000002	mmHg	
Vapor pressure	TEST QSAR	0.000000564	mmHg	
Solubility in water	OPERA QSAR	2474355.287	µg/L	
Solubility in water	TEST QSAR	934383.7891	µg/L	
Bioconcentration factor	OPERA QSAR	3.67787	no units	
Bioconcentration factor	TEST QSAR	9.18333	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	67.7834	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.78757	no units	
Henry's Law constant	OPERA QSAR	1.2E-10	$atm\text{-}m^3/mol$	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tebuthiuron

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
125	OPP. 2018. Tebuthiuron. Review of Submitted Data and Impact to the Tebuthiuron: Draft Human Risk Assessment. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D450293
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Terbacil

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Terbacil
CASRN:	5902-51-2
DTXSID:	DTXSID8024317
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00033

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	460	decreased pup body weights pnd 7-21	all infants	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.154	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X			

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	X	Not Applicable	Not Applicable

Basis

The EPA made a negative regulatory determination for terbacil in RD 2 (2008). The EPA identified that terbacil did not appear to occur frequently at levels of public health concern in PWSs and did not present a meaningful opportunity for health risk reduction based on, among other data, the following:
- No detections above the RD 2 HRL in UCMR 1 monitoring
- RD 2 HRL = 90 µg/L

USEPA, 2008 [228]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Terbacil

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.33	mg/kg/day	OPP 2019	Edwards 2017	decreased pup body weights pnd 7-21	all infants	0.143	460	[324]	Note: Infants chosen as target population because of decreased BW in pups, and the pesticide is not a HHBP pesticide
Cancer Classification (CC)	NL		OPP 2019						[324]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.3	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.09	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	5000	mg/kg	NIH HSDB	min
LD50	7500	mg/kg	NIH HSDB	max
LOAEL	6.25	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1072.4	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.25	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1072.4	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	7	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0100231	mol/kg	TEST QSAR	
Ames mutagenicity test	0.196	no units	TEST QSAR	
Developmental toxin test	0.982	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Terbacil

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	3,873	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,667	228	Sites	2.4	0.0018	0.0268	0.154	1.52	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	8	30066	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	82

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	67	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	13	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	402	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,001	192	Sites	2	0.003	0.035	0.231	2.68	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	1	Sites	0.88	0.002664	0.00266	0.00266	0.0113	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	2	Sites	25	0.00118	0.00118	0.00118	0.1875	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	3	1	Sites	33	0.034	0.034	0.034	0.034	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0154	0.0154	0.0154	0.0154	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.0072	0.0072	0.0072	0.0072	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000109	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.30428	days	
Boiling point	OPERA QSAR	277.637	degree C	
Boiling point	TEST QSAR	300.294	degree C	
Vapor pressure	OPERA QSAR	0.000000475	mmHg	
Vapor pressure	TEST QSAR	0.000000202	mmHg	
Solubility in water	OPERA QSAR	716295.8531	µg/L	
Solubility in water	TEST QSAR	841004.605	µg/L	
Bioconcentration factor	OPERA QSAR	3.34181	no units	
Bioconcentration factor	TEST QSAR	4.57088	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	45.7517	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.89021	no units	
Henry's Law constant	OPERA QSAR	0.00000146	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Terbacil

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
228	USEPA. 2008. Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Contaminant Candidate List (CCL 2). EPA Report 815-R-08-012. June 2008.
324	USEPA. 2019. Terbacil: Human Health Draft Risk Assessment for Registration Review. EPA-HQ-OPP-2011-0054-0038. DP No. D446169. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Terbufos

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Terbufos
CASRN:	13071-79-9
DTXSID:	DTXSID2022254
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	19

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
8	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.01	RBC ChE inhibition in female PND 21 pups & GD 20 male fetuses, and brain cholinesterase inhibition in PND 21 males & GD 20 dams	all infants	OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.192	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X		X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	X	Not Applicable

Basis

The EPA made a negative regulatory determination on terbufos in RD 3 (2015). The EPA determined that it did not appear to occur in PWSs with a frequency and at levels of public health concern, based on, among other data, the following:
- No detections in UCMR 1 monitoring
- RD 3 HRL = 0.35 µg/L
- MRL = 0.5 µg/L

USEPA, 2014 [251]

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Terbufos

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00001	mg/kg/day	OPP 2015	MRID: 46240802; MRID 46214301	RBC ChE inhibition in female PND 21 pups & GD 20 male fetuses, and brain cholinesterase inhibition in PND 21 males & GD 20 dams	all infants	0.143	0.01	[264]	Note: RfD equivalent is a steady-state (ss) population-adjusted dose (PAD). The ssPAD is considered protective of chronic exposure for the effect of ChE inhibition because increased exposure does not increase ChE inhibition.
Cancer Classification (CC)	NL		OPP 2015						[264]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.005	mg/l	EPA DWSHA 2018	
Lifetime Health Advisory	0.0004	mg/l	EPA DWSHA 2018	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2	mg/kg	NIH HSDB	min
LD50	9.2	mg/kg	NIH HSDB	max
LOAEL	0.015	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	0.2188	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.015	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	0.1795	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	14	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00000578	mol/kg	TEST QSAR	
Ames mutagenicity test	0.005	no units	TEST QSAR	
Developmental toxin test	-0.779	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Terbufos

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003	295	0	Sites	0	ND	ND	ND	ND	µg/L	
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,575	33	Sites	0.31	0.001	0.0235	0.192	0.56	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	26	1694451	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	1	Sites	6	0.089	0.089	0.089	0.089	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	44	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,500	42	Sites	0.34	0.005	0.089	0.192	0.528	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites					0.015	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites					0.05	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	1	1	Sites	100	0.04	0.04	0.04	0.04	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000188	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	347.914	days	
Boiling point	OPERA QSAR	315.357	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000317909	mmHg	
Vapor pressure	TEST QSAR	0.000148594	mmHg	
Solubility in water	OPERA QSAR	4931.982	µg/L	
Solubility in water	TEST QSAR	18026.25	µg/L	
Bioconcentration factor	OPERA QSAR	64.5379	no units	
Bioconcentration factor	TEST QSAR	125.893	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	660.363	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.47814	no units	
Henry's Law constant	OPERA QSAR	0.00000463	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Terbufos

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
251	USEPA. 2014. Regulatory Determinations 3 Support Document. April 2014. EPA Publication # 815-R14-003.
264	USEPA. 2015. Terbufos. Acute and Steady State Aggregate Dietary Exposure and Risk Assessment of Food and Drinking Water to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D422672.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Terbuthylazine

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Terbuthylazine
CASRN:	5915-41-3
DTXSID:	DTXSID4027608
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0049

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	8	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	13	decreased body weight gain	general population	WHO 2003

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0638	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Terbuthylazine

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0022	mg/kg/day	WHO 2003	Werner 1996	decreased body weight gain	general population	0.0338	13	[410]	Note: The RfD equivalent is a tolerable daily intake (TDI).
			OPP 2019						[127]	Note: "A human health risk assessment for the registered uses of terbuthylazine is not needed for registration review, as there are no significant exposures in food and water, and there are no residential exposures." This assessment did not derive oral toxicity values.
Cancer Classification (CC)	D		OPP 2010						[123]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Drinking Water Guideline Value	0.007	mg/l	WHO Drinking Water Quality Guidelines	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1845	mg/kg	NIH HSDB	
LOAEL	1.24	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	88.54	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.35	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	88.54	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	7	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0049204	mol/kg	TEST QSAR	
Ames mutagenicity test	0.205	no units	TEST QSAR	
Developmental toxin test	0.726	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Terbuthylazine
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,590	135	Sites	2.4	0.00018	0.007	0.0638	1.9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	2	Sites	4	0.003	0.008	0.0263	0.027	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	21	1	Sites	5	0.004	0.004	0.008	0.009	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	7,218	164	Sites	2	0.00013	0.00696	0.038	192	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	468	29	Sites	6	0.006	0.22	0.821	2.5	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0104	0.0104	0.0104	0.0104	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	5	Sites	0.72	6e-04	0.0035	0.00608	0.0066	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000233	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.04673	days	
Boiling point	OPERA QSAR	338.478	degree C	
Boiling point	TEST QSAR	319.277	degree C	
Vapor pressure	OPERA QSAR	0.0000011	mmHg	
Vapor pressure	TEST QSAR	0.000000899	mmHg	
Solubility in water	OPERA QSAR	8062.821	µg/L	
Solubility in water	TEST QSAR	77300.17152	µg/L	
Bioconcentration factor	OPERA QSAR	15.8961	no units	
Bioconcentration factor	TEST QSAR	11.4815	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	209.524	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.20992	no units	
Henry's Law constant	OPERA QSAR	1.23E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Terbuthylazine

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
123	OPP. 2010. Summary of Human Health Effects Information for the Terbuthylazine Reregistration Review Decision Document. U.S. Environmental Protection Agency, Office of Prevention, Pesticides, and Toxic Substances, Washington, D.C.
127	OPP. 2019. Registration Review Draft Risk Assessment for Terbuthylazine. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcodes: 454068, 454069
410	WHO. 2003. Terbuthylazine (TBA) in Drinking-water. World Health Organization (WHO), Geneva, Switzerland.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

tert-Butyl alcohol

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	tert-Butyl alcohol
CASRN:	75-65-0
DTXSID:	DTXSID8020204
Use:	Manufacture of flavors and perfumes; solvent; alcohol denaturant; gasoline additive; lacquers and paint removers
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
0.011

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
2	carcinogen with linear mode of action	9	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	based on the increased incidence of thyroid follicular cell adenomas in female B6C3F1 mice and thyroid follicular cell adenomas and carcinomas in male B6C3F1 mice	general population	IRIS 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.68	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

tert-Butyl alcohol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.4	mg/kg/day	IRIS 2021	NTP 1995	increases in severity of nephropathy in female rats	general population	0.0338	2000	[372]	
Cancer Slope Factor (CSF)	0.0005	$(mg/kg/day)^{-1}$	IRIS 2021	NTP 1995	based on the increased incidence of thyroid follicular cell adenomas in female B6C3F1 mice and thyroid follicular cell adenomas and carcinomas in male B6C3F1 mice	general population	0.0338	60	[372]	
Cancer Classification (CC)	S		IRIS 2021						[372]	S = Suggestive evidence for carcinogenicity
			OPP 1995						[188]	Dietary exposure is not a concern for the aliphatic alcohols when used as a plant regulator (ripener). Dietary exposure is not expected from this use. A dietary risk assessment is not required.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Hepatic, Hematologic	855	Lin, 2020	Hepatic, Hematologic, Reproductive	978	Lin, 2020	8/1/2020	8/22/2024	138	1	0	1

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Notification Level	0.012	mg/l	CalEPA OEHHA Chemical Database	
Reference Concentration (RfC)	5	mg/m^3	EPA IRIS	
Cancer Classification (CC)	Female.Mice SE	no units	HHS NTP	SE = Some evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats SE	no units	HHS NTP	SE = Some evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3500	mg/kg	NIH HSDB	min
LD50	3600	mg/kg	NIH HSDB	max
TD50	64.6	mg/kg/day	NIH CPDB	min
TD50	44500	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00316228	mol/kg	TEST QSAR	
Ames mutagenicity test	0	no units	TEST QSAR	
Developmental toxin test	0.56	no units	TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

tert-Butyl alcohol

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,341	100	Sites	4	0.1	0.27	0.68	10.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	25	933,851

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 - 5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	52	2	Sites	4	0.61	2.37	3.77	4.12	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,080	140	Sites	5	0.09	0.36	2.23	230	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	13	Sites	34	0.136	0.315	2.06	4.914	µg/L	
Arnold et al. 2016 (Unfiltered) [2]	2012 - 2013	527	11	Sites	2	0.17	0.27	1.2	1.62	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000869	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	7.55742	days	
Boiling point	OPERA QSAR	82.6382	degree C	
Boiling point	TEST QSAR	89.48	degree C	
Vapor pressure	OPERA QSAR	40.2796	mmHg	
Vapor pressure	TEST QSAR	39.8107	mmHg	
Solubility in water	OPERA QSAR	673815131.5	µg/L	
Solubility in water	TEST QSAR	190525759.2	µg/L	
Bioconcentration factor	OPERA QSAR	5.0074	no units	
Bioconcentration factor	TEST QSAR	3.29	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	10.1455	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	0.352933	no units	
Henry's Law constant	OPERA QSAR	0.00000905	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

tert-Butyl alcohol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
188	USEPA. 1995. Reregistration Eligibility Decision (RED): ALIPHATIC ALCOHOLS U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. EPA 738-R-95-013 .
372	USEPA. 2021. Toxicological Review of tert-Butyl Alcohol (tert-Butanol) [CASRN 75-65-0]. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC. EPA/635/R-20/370Fa.

Tetraconazole

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tetraconazole
CASRN:	112281-77-3
DTXSID:	DTXSID8034956
Use:	Fungicide used on blueberries, cereals, grapes, ornamentals, peanuts among others
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00033

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	80	Based on decreased litter weight and mean pup body weight in litters of all generations before weaning and decreased mean litter size and number of pups in F1 generation	all infants	OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0267	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tetraconazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.06	mg/kg/day	OPP 2020	MRID 44305306	Based on decreased litter weight and mean pup body weight in litters of all generations before weaning and decreased mean litter size and number of pups in F1 generation	all infants	0.143	80	[351]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL.
Cancer Classification (CC)	NL		OPP 2020						[351]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.5	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.047	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LOAEL	2.95	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.73	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	100	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	39	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	20	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	85	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	85	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.138	no units	TEST QSAR	
Developmental toxin test	0.626	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Tetraconazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,260	64	Sites	2.8	0.00026	0.00596	0.0267	0.422	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	31	239371	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	6	Sites	40	0.002	0.0032	0.0096	0.084	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,042	62	Sites	3	0.0001	0.00633	0.0355	0.462	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	1	Sites	0.46	0.00316	0.00316	0.00316	0.015	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	5	Sites	50	0.002	0.0062	0.018	0.03	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	6	5	Sites	83	0.0188	0.02	0.0263	0.0289	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.0219	0.0219	0.0219	0.0219	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	4	Sites	0.68	0.0008	0.00135	0.00454	0.0058	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.00475	0.00475	0.00475	0.00475	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000392	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.27457	days	
Boiling point	OPERA QSAR	339.059	degree C	
Boiling point	TEST QSAR	344.772	degree C	
Vapor pressure	OPERA QSAR	0.00000135	mmHg	
Vapor pressure	TEST QSAR	0.000000171	mmHg	
Solubility in water	OPERA QSAR	155123.954	µg/L	
Solubility in water	TEST QSAR	5619.314	µg/L	
Bioconcentration factor	OPERA QSAR	309.506	no units	
Bioconcentration factor	TEST QSAR	131.22	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	748.422	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.55959	no units	
Henry's Law constant	OPERA QSAR	0.00000253	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tetraconazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
351	USEPA. 2020. Tetraconazole. Acute and Chronic Dietary (Food and Drinking Water) Exposure and Risk Assessment to Support the Human Health Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D459934
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Thiabendazole

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Thiabendazole
CASRN:	148-79-8
DTXSID:	DTXSID0021337
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000027

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	8	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	600	reduced body weight in male rats	general population	OPP 2021; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0164	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Thiabendazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.1	mg/kg/day	OPP 2021; OPP 2019	MRID: 43593201	reduced body weight in male rats	general population	0.0338	600	[371]; [325]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2021) has been published but does not contribute new data for HRL.
Cancer Classification (CC)	L/NL		OPP 2021; OPP 2019						[371]; [325]	L/NL = Likely to be carcinogenic but not likely carcinogenic at doses below the reference dose (RfD) (or a similar threshold description has been provided for the chemical)

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.5	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.21	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1300	mg/kg	NIH HSDB	min
LD50	4000	mg/kg	NIH HSDB	max
LOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	769.5	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	10	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	769.5	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	37	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	9.4	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	400	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.575	no units	TEST QSAR	
Developmental toxin test	0.486	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Thiabendazole

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence						Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,446	28	Sites	1.9	0.00082	0.00453	0.0164	0.176	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	25109	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	4	6,812

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence						Magnitude			
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	10	0	Sites	0						
Furlong et al 2017 (Finished) [71]	2007 - 2012	25	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence						Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,976	107	Sites	4	0.00017	0.00539	0.0233	0.127	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	138	8	Sites	6	0.028	0.032	0.0448	0.0601	µg/L	
Furlong et al 2017 (Ambient) [71]	2007 - 2012	25	0	Sites	0				ND	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25	0	Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	12	Sites	32	0.00397	0.0117	0.0161	0.0422	µg/L	
Bexfield et al. 2019 (Groundwater) [42]	2013 - 2015	1,106	2	Sites	0.18	0.00641	0.169	0.3	0.332	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Stackelberg et al. (2004) via Kostich et al. 2010 (Ambient) [101]	2010	NA							0.011	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	7	Sites	33	0.00406	0.00826	0.161	1.157	µg/L	
Kostich et al. 2010 (Ambient) [101]	2001 - 2009	NA							0.515	µg/L	
Waste Water Effluent		Prevalence						Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	19	Sites	90	0.00302	0.0169	0.0262	0.113	µg/L	
Glassmeyer et al. (2005) via Kostich et al. 2010 (Wastewater) [101]	2010	NA							0.515	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000338	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.53815	days	
Boiling point	OPERA QSAR	335.969	degree C	
Boiling point	TEST QSAR	403.909	degree C	
Vapor pressure	OPERA QSAR	4.04E-09	mmHg	
Vapor pressure	TEST QSAR	0.000000706	mmHg	
Solubility in water	OPERA QSAR	50694.875	µg/L	
Solubility in water	TEST QSAR	31530.84375	µg/L	
Bioconcentration factor	OPERA QSAR	7.89022	no units	
Bioconcentration factor	TEST QSAR	18.197	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1739.36	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.46847	no units	
Henry's Law constant	OPERA QSAR	6.92E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Thiabendazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
42	Bexfield, L.M., P.L. Toccalino, K. Belitz, W.T. Foreman, and E.T. Furlong. 2019. Hormones and pharmaceuticals in groundwater used as a source of drinking water across the United States. Environmental Science and Technology 53: 2950-2960.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
71	Furlong, E.T., Batt, A.L., Glassmeyer, S.T., Noriega, M.C., Kolpin, D.W., Mash, H., Schenck, K.M. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States: Pharmaceuticals. Science of The Total Environment. 579 (1629-1642).
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
101	Kostich, MS, et al., 2010. Predicting variability of aquatic concentrations of human pharmaceuticals. Sci. Total Environ. 408 (20), 4504e4510.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
325	USEPA. 2019. Thiabendazole and Salts: Draft Human Health Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
371	USEPA. 2021. Thiabendazole: Human Health Risk Assessment for the Establishment of Permanent Tolerances and Registration for Use on Animal feed, nongrass, group 18; Brassica, leafy greens, subgroup 4-16B; and Sweet Potato; and Crop Group Conversions/Expansions to Beet, garden, leaves; Burdock, edible, leaves; Carrot, leaves; Celeriac, leaves; Chervil, turnip rooted, leaves; Chicory, leaves; Fruit, citrus, group 10-10; Fruit, pome, group 11-10; Kohlrabi; Vegetable, Brassica, head and stem, group 5-16; Vegetable, root, except sugar beet, subgroup 1B; and Vegetable, tuberous and corm, subgroup 1C, except sweet potato. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Thiamethoxam

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Thiamethoxam
CASRN:	153719-23-4
DTXSID:	DTXSID2034962
Use:	Insecticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.89

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	71	Increased incidence and severity of tubular atrophy of the testes in F1 males; in a separate study: germ cell loss in F1 generation males	general population	OPP 2022; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
63		EDWC GW	OPP	2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Thiamethoxam

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.012	mg/kg/day	OPP 2022; OPP 2019	MRIDs: 44718707; 46402904	Increased incidence and severity of tubular atrophy of the testes in F1 males; in a separate study: germ cell loss in F1 generation males	general population	0.0338	71	[378]; [326]	This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer (2022) OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	NL		OPP 2022; OPP 2019						[378]; [326]	"based on convincing evidence that a non-genotoxic mode of action for liver tumors was established in the mouse and that the carcinogenic effects are a result of a mode of action dependent on sufficient amounts of a hepatotoxic metabolite produced persistently. Based on limited in vitro human metabolism data and comparative metabolism studies in the mouse and rat, the human appears to be more like the rat, which does not develop tumors after thiamethoxam treatment. Quantification of cancer risk is not required."; NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	2.3	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.35	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.4	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.2	mg/l	MN DOH	
Health-Based Screening Level	0.077	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.2	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1563	mg/kg	NIH HSDB	
LOAEL	1.84	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.61	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	1	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	14.3	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	1335	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	1.41	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	1335	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00365595	mol/kg	TEST QSAR	
Ames mutagenicity test	0.998	no units	TEST QSAR	
Developmental toxin test	1.036	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Thiamethoxam
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	4	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	44	320190	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	10	3	Sites	30	0.0102	0.0102	0.0102	0.0102	µg/L	
Klarich et al. 2017 (Finished) [99]	2016	20	19	Sites	95	0.00026	0.00084	0.00215	0.00415	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	374	66	Sites	18	0.0008	0.006	0.111	4.37	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites							
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	2	Sites	20	0.0102	0.0102	0.0102	0.025	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	353	90	Sites	25	0.000428	0.137	1.09	5	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	8	Sites	21	0.0019	0.016	0.0795	0.190	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	2	Sites	10	0.0113	0.07	0.309	0.392	µg/L	
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Groundwater (acute)	2022	OPP	63	µg/L	Pesticide in Water Calculator (PWC, v. 1.52)	The critical effect of male reproductive issues in F1 generation pups is considered a less-than-chronic response in a sensitive population. To be protective of this population, the modeled groundwater acute concentration was selected as the occurrence concentration for thiamethoxam.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000748	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.44664	days	
Boiling point	OPERA QSAR	278.447	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.00000154	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	4063520.3	µg/L	
Solubility in water	TEST QSAR	2137723.808	µg/L	
Bioconcentration factor	OPERA QSAR	16.0938	no units	
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	119.597	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	-0.119138	no units	
Henry's Law constant	OPERA QSAR	2.33E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Thiamethoxam

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
99	Klarich, K.L., Pflug, N.C., DeWald, E.M., Hladik, M.L., Kolpin, D.W., Cwiertny, D.M. and LeFevre, G.H., 2017. Occurrence of neonicotinoid insecticides in finished drinking water and fate during drinking water treatment. Environmental Science & Technology Letters, 4(5), pp.168-173.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
326	USEPA. 2019. Thiamethoxam. Human Health Risk Assessment for Adding Foliar Uses on Alfalfa, Certain Cereal Grains, and Potato, and a New Use on Sugarcane. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D439214, D439216.
378	USEPA. 2022. Thiamethoxam. Human Health Risk Assessment for Use on Imported Pineapple. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D462769.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Thiobencarb

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Thiobencarb
CASRN:	28249-77-6
DTXSID:	DTXSID6024337
Use:	Pre-emergent to early post-emergent herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.002

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	6	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	60	Based on clinical signs, increased BUN, increased relative liver and kidney weight and histopathological changes in liver and kidney.	general population	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.122	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Thiobencarb

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	OPP 2018	MRID: 00154506	Based on clinical signs, increased BUN, increased relative liver and kidney weight and histopathological changes in liver and kidney.	general population	0.0338	60	[300]	"The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)."
Cancer Classification (CC)	D		OPP 2018						[300]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	7	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	1	mg/kg/day	EPA HHBP	
Public Health Goal	0.042	mg/l	CalEPA OEHHA Public Health Goals	
Health-Based Screening Level	0.06	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	560	mg/kg	NIH HSDB	min
LD50	1903	mg/kg	NIH HSDB	max
LOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	200	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	200	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	9	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00574116	mol/kg	TEST QSAR	
Ames mutagenicity test	0.269	no units	TEST QSAR	
Developmental toxin test	0.403	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Thiobencarb
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	10,136	79	Sites	0.78	0.00017	0.01	0.122	4.38	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	6	1720887	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	500

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	54	0	Sites	0						
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	265	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	8	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	5	Sites	33	0.029	0.0745	0.151	0.19	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	2,975	2	Sites	0.07	0.097	0.848	1.45	1.6	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	10,952	112	Sites	1	0.00002	0.015	0.133	12.4	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	807	65	Sites	8	0.0025	1	4.36	150	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.343	0.343	0.343	0.343	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000932	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	2.94631	days	
Boiling point	OPERA QSAR	305.694	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000022	mmHg	
Vapor pressure	TEST QSAR	0.000147571	mmHg	
Solubility in water	OPERA QSAR	23664.204	µg/L	
Solubility in water	TEST QSAR	21782.41	µg/L	
Bioconcentration factor	OPERA QSAR	169.455	no units	
Bioconcentration factor	TEST QSAR	25.0611	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1860.99	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.39983	no units	
Henry's Law constant	OPERA QSAR	1.95E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Thiobencarb

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
300	USEPA. 2018. Thiobencarb Acute and Chronic Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D44516.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Thiram

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Thiram
CASRN:	137-26-8
DTXSID:	DTXSID5021332
Use:	Pesticide; rubber accelerator; antiseptic
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	2	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	89	changes in hematology, clinical chemistry, incidences of bile duct hyperplasia; slight anemia in females, decreases in crural muscle weights in both sexes, and histopathological findings in the crural muscle, stomach, thyroid (females), and nasal cavity (females)	general population	OPP 2023; OPP 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
1.29		EDWC SW	OPP	2020

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Thiram

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.015	mg/kg/day	OPP 2023; OPP 2015	MRIDs: 42157601, 45770201	changes in hematology, clinical chemistry, incidences of bile duct hyperplasia; slight anemia in females, decreases in crural muscle weights in both sexes, and histopathological findings in the crural muscle, stomach, thyroid (females), and nasal cavity (females)	general population	0.0338	89	[392]; [263]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer (2023) OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	NL		OPP 2023; OPP 2015						[392]; [263]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.4	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.014	mg/kg/day	EPA HHBP	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	210	mg/kg	NIH HSDB	min
LD50	1350	mg/kg	NIH HSDB	max
LOAEL	0.84	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	112	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.84	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	112	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	35	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	7.01	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	7.34	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2.26	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2.35	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00381066	mol/kg	TEST QSAR	
Ames mutagenicity test	0.476	no units	TEST QSAR	
Developmental toxin test	0.772	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Thiram

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022										

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	2	177919	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	14	58,449

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	500,000 - 1,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Ambient Water		**Prevalence**				**Magnitude**					
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	7	0	Sites	0					µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration (EDWC) in Surface Water, 1-in-10 Year Mean	2020	OPP	1.29	ug/L	Pesticide Water Calculator (PWC)	The modeled surface water chronic concentration provided by the most recent EPA OPP exposure assessment was selected as the occurrence concentration for thiram. This value coincides with the chronic critical effects of multiple signs of systemic toxicity and hematological alterations provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000177	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	70.8089	days	
Boiling point	OPERA QSAR	305.759	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.0000172	mmHg	
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR	24901.98234	µg/L	
Solubility in water	TEST QSAR	141244.1054	µg/L	
Bioconcentration factor	OPERA QSAR	3.39419	no units	
Bioconcentration factor	TEST QSAR	10.4954	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	674.854	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.72962	no units	
Henry's Law constant	OPERA QSAR	1.97E-09	atm-m^3/mol	

Thiram

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
263	USEPA. 2015. Revised Human Health Risk Assessment for the Import Use of Thiram on Avocado, PP#4E8250 and Banana, PP#4E8268. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.. DP No: D427383.
392	USEPA. 2023. Thiram. Third Addendum to Draft Risk Assessment (DRA) and Revised Occupational and Residential Exposure Assessment. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.. DP Barcode: D466696.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Tolyltriazole

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tolyltriazole
CASRN:	29385-43-1
DTXSID:	DTXSID0026171
Use:	In water treatment, corrosion inhibitor for copper and its alloys
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.025

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	10	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	32	Reduced offspring body weight	all infants	MDH 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.797	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tolyltriazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.017	mg/kg/day	MDH 2019	JBRC 2007	renal proximal tubule regeneration	general population	0.0338	100	[109]	Note: this RfD equivalent was derived from a surrogate chemical (1H-benzotriazole) and may not apply UFs using the same methods as EPA guidance
Reference Dose (RfD) or Equivalent	0.023	mg/kg/day	MDH 2019	JBRC 2007	Reduced offspring body weight	all infants	0.143	32	[109]	Note: this RfD equivalent was derived from a surrogate chemical (1H-benzotriazole) and may not apply UFs using the same methods as EPA guidance. MDH derives a chronic RfD but notes that the acute/subchronic RfD based on developmental effects results in more protective guidance values. Consistent with agency guidance, OW considers an RfD based on developmental effects to be applicable to chronic exposure scenarios and used this RfD as the basis for the HRL.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.02	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.02	mg/l	MN DOH	
Subchronic Health-Based Guidance Value	0.02	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	800	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Tolyltriazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	1,410	142	Sites	10	0.00672	0.146	0.797	4.17	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Bradley et al. 2018 (Finished) [44]	2016	26	3	Sites	12	0.0131	0.0333	0.0352	0.0357	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	1,129	323	Sites	29	0.00671	0.184	0.986	145	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	20	Sites	53	0.0213	0.664	2.33	4.661	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95	0.134	0.861	2.73	6.79	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	20	Sites	95	0.131	1.36	9.3	27.7	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tolyltriazole
CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
109	MDH. 2019. Toxicological Summary for: Tolyltriazole and 5-Methyl-1H-Benzotriazole. Health Based Guidance for Water. Minnesota Department of Health (MDH), Environmental Health Division, Health Risk Assessment Unit, St Paul, MN.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Triadimefon

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Triadimefon
CASRN:	43121-43-3
DTXSID:	DTXSID3023897
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	2.2

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	neurologic hyperactivity	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
443		EDWC GW	OPP	2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triadimefon

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.034	mg/kg/day	OPP 2021	MRID 44153501	neurologic hyperactivity	general population	0.0338	200	[373]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment (2021) providing new information has been published since that time and has been used to derive an HRL.
Cancer Classification (CC)	C		OPP 2021						[373]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.23	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.034	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	90	mg/kg	NIH HSDB	min
LD50	1000	mg/kg	NIH HSDB	max
LOAEL	19.6	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	765	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	765	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	17	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00240436	mol/kg	TEST QSAR	
Ames mutagenicity test	0.242	no units	TEST QSAR	
Developmental toxin test	0.409	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triadimefon

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	172	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	1	8

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.0022	0.0022	0.0022	0.05	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	478	3	Sites	0.63	0.0017	0.0375	1.1	1.5	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	114	2	Sites	2	0.00216	0.00216	0.00216	0.0042	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	2	Sites	20	0.004	0.0069	0.0264	0.045	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	83	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Groundwater (acute)	2022	OPP	443	µg/L	Pesticide in Water Calculator (PWC v2.0)	The estimated drinking water concentration value includes the total residues of triadimefon and its degradate triadimenol. The critical effect of hyperactivity is considered to be a less-than-chronic response. To account for this, the modeled groundwater acute concentration was

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000036	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.32299	days	
Boiling point	OPERA QSAR	350.223	degree C	
Boiling point	TEST QSAR	332.195	degree C	
Vapor pressure	OPERA QSAR	1.51E-08	mmHg	
Vapor pressure	TEST QSAR	8.34E-08	mmHg	
Solubility in water	OPERA QSAR	71964.6375	µg/L	
Solubility in water	TEST QSAR	97493.8625	µg/L	
Bioconcentration factor	OPERA QSAR	102.831	no units	
Bioconcentration factor	TEST QSAR	75.8578	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	513.823	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.7706	no units	
Henry's Law constant	OPERA QSAR	6.88E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triadimefon

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
373	USEPA. 2021. Triadimefon and Triadimenol. Human Health Draft Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Triadimenol

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Triadimenol
CASRN:	55219-65-3
DTXSID:	DTXSID0032493
Use:	Agricultural fungicide and seed protectant
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	2.2

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	200	neurologic hyperactivity	general population	OPP 2021

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
443		EDWC GW	OPP	2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triadimenol

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.034	mg/kg/day	OPP 2021	MRID 44153501	neurologic hyperactivity	general population	0.0338	200	[373]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides), however, an assessment (2021) providing new information has been published since that time and has been used to derive an HRL.
Cancer Classification (CC)	C		OPP 2021						[373]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	0.023	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.0034	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	689	mg/kg	NIH HSDB	min
LD50	3800	mg/kg	NIH HSDB	max
LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	868	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	868	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	15	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	717	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	7.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	717	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00688652	mol/kg	TEST QSAR	
Ames mutagenicity test	0.185	no units	TEST QSAR	
Developmental toxin test	0.489	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triadimenol

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	16	10016	2014

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.033	0.033	0.033	0.065	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	332	9	Sites	3	0.0017	0.0483	0.276	0.574	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	2	Sites	0.92	0.01	0.0333	0.193	0.261	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	1	Sites	10	0.033	0.033	0.033	0.065	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration in Groundwater (acute)	2022	OPP	443	µg/L	Pesticide in Water Calculator (PWC v2.0)	The estimated drinking water concentration value includes the total residues of triadimefon and its degradate triadimenol. The critical effect of hyperactivity is considered to be a less-than-chronic response. To account for this, the modeled groundwater acute concentration was selected as the occurrence concentration for triadimefon and triadimenol.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000138	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.36074	days	
Boiling point	OPERA QSAR	321.572	degree C	
Boiling point	TEST QSAR	339.154	degree C	
Vapor pressure	OPERA QSAR	3.14E-10	mmHg	
Vapor pressure	TEST QSAR	0.000000158	mmHg	
Solubility in water	OPERA QSAR	92705.85303	µg/L	
Solubility in water	TEST QSAR	79059.61677	µg/L	
Bioconcentration factor	OPERA QSAR	111.055	no units	
Bioconcentration factor	TEST QSAR	47.0977	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	502.024	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.90124	no units	
Henry's Law constant	OPERA QSAR	2.97E-08	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triadimenol

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
373	USEPA. 2021. Triadimefon and Triadimenol. Human Health Draft Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Tri-allate
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tri-allate
CASRN:	2303-17-5
DTXSID:	DTXSID5024344
Use:	Pre-emergent selective herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.15

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	Carcinogen with linear mode of action	7	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.413	hepatocellular carcinomas in male mice, renal tubular cell adenomas in rats	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.0611	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triallate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.025	mg/kg/day	OPP 2019	Stout and Thake 1987; Vigneault 1988	decreased survival in males and females, decreased mean body weights in males and increased adrenal weights in males	general population	0.0338	150	[327]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Slope Factor (CSF)	0.0717	$(mg/kg/day)^{-1}$	OPP 2019	Stout et al. 1983	hepatocellular carcinomas in male mice, renal tubular cell adenomas in rats	general population	0.0338	0.413	[327]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides for more information).
Cancer Classification (CC)	C		OPP 2019						[327]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	4	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.6	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.000446	mg/l	Health-based screening levels from USGS	
Health-Based Screening Level	0.16	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	800	mg/kg	NIH HSDB	min
LD50	2700	mg/kg	NIH HSDB	max
LOAEL	5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	90	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	1.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	21	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0144544	mol/kg	TEST QSAR	
Ames mutagenicity test	0.687	no units	TEST QSAR	
Developmental toxin test	0.189	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triallate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,129	93	Sites	1	0.001	0.008	0.0611	0.65	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	9	91572	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	4	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	3	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	1	Sites	6	0.12	0.12	0.12	0.12	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	8,321	83	Sites	1	0.001	0.0056	0.0972	0.19	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	0	Sites	0						
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000307	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.40087	days	
Boiling point	OPERA QSAR	293.249	degree C	
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR	0.000120097	mmHg	
Vapor pressure	TEST QSAR	0.000402717	mmHg	
Solubility in water	OPERA QSAR	4051.845	µg/L	
Solubility in water	TEST QSAR	10510.425	µg/L	
Bioconcentration factor	OPERA QSAR	454.39	no units	
Bioconcentration factor	TEST QSAR	90.7821	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	2234.16	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.59952	no units	
Henry's Law constant	OPERA QSAR	0.0000517	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triallate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
327	USEPA. 2019. Triallate. Human Health Draft Risk Assessment in Support of Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Tributyl phosphate

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tributyl phosphate (TNBP)
CASRN:	126-73-8
DTXSID:	DTXSID3021986
Use:	Flame-retardant component of aircraft hydraulic fluid; solvent
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.053

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	carcinogen with linear MOA	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	3	bladder neoplasia (combined incidence of transitional cell and squamous cell carcinomas, and papillomas)	general population	PPRTV 2010

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.16	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tributyl phosphate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.011	mg/kg/day	PPRTV 2010	Bio/dynamics Inc., 1991b	"cholinergic salivation"	general population	0.0338	65	[240]	
Reference Dose (RfD) or Equivalent	0.08	mg/kg/day	ATSDR 2012	Arnold et al. 1997	"urinary bladder hyperplasia"	general population	0.0338	500	[21]	
Cancer Slope Factor (CSF)	0.009	$(mg/kg/day)^{-1}$	PPRTV 2010	Auletta et al. 1998a	bladder neoplasia (combined incidence of transitional cell and squamous cell carcinomas, and papillomas)	general population	0.0338	3	[240]	
Cancer Classification (CC)	L		PPRTV 2010						[240]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2011	12/17/2019	454	0	0	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	1.1	mg/kg/day	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.08	mg/kg/day	CDC ATSDR	
Provisional Subchronic RfD	0.03	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	400	mg/kg	NIH HSDB	min
LD50	20000	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	10	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0151705	mol/kg	TEST QSAR	
Ames mutagenicity test	0.08	no units	TEST QSAR	
Developmental toxin test	0.354	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Tributyl phosphate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	568	51	Sites	9	0.004	0.045	0.16	0.92	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water			Prevalence					Magnitude			
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	4	Sites	8	0.02	0.025	0.137	0.34	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	3	Sites	43	0.02	0.03	0.042	0.05	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	1	Sites	100						
Ambient Water			Prevalence					Magnitude			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,196	627	Sites	20	0.004	0.05	0.2	11	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	4		0.087		0.087	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	14	Sites	37	0.0116	0.0601	0.114	0.503	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100	0.1	0.1	0.1	0.1	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	14	Sites	67	0.024	0.0965	2.65	7.12	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent			Prevalence					Magnitude			
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	20	Sites	95	0.082	0.14	0.27	1.1	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000178	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.67991	days	
Boiling point	OPERA QSAR	288.948	degree C	
Boiling point	TEST QSAR	281.321	degree C	
Vapor pressure	OPERA QSAR	0.00113583	mmHg	
Vapor pressure	TEST QSAR	0.000174985	mmHg	
Solubility in water	OPERA QSAR	280914.8896	µg/L	
Solubility in water	TEST QSAR	832531.3734	µg/L	
Bioconcentration factor	OPERA QSAR	29.5118	no units	
Bioconcentration factor	TEST QSAR	8.26038	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	264.326	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.99711	no units	
Henry's Law constant	OPERA QSAR	0.00000112	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tributyl phosphate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
21	ATSDR. 2012. Toxicological Profile for Phosphate Ester Flame Retardants. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
240	USEPA. 2010. Provisional Peer-Reviewed Toxicity Values for Tributyl phosphate. EPA/690/R-20/024F. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Triclopyr

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Triclopyr
CASRN:	55335-06-3
DTXSID:	DTXSID0032497
Use:	Herbicide; woody plants and many broad-leaved weeds in grassland, uncultivated land, industrial areas, coniferous forests, plantation crops and rice fields.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.00091

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	300	proximal renal tubule degeneration	general population	OPP 2024; OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.274	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triclopyr

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.05	mg/kg/day	OPP 2024; OPP 2019	Vedula et al., 1995; MRID 43545701	proximal renal tubule degeneration	general population	0.0338	300	[398]; [319]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A new OPP assessment (2024) exists but does not contribute new data for HRL
Cancer Classification (CC)	D		OPP 2024; OPP 2019						[398]; [319]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	1	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.05	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.3	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	310	mg/kg	NIH HSDB	min
LD50	2140	mg/kg	NIH HSDB	max
LOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	3	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	2.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	0.5	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	250	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00272898	mol/kg	TEST QSAR	
Ames mutagenicity test	0.049	no units	TEST QSAR	
Developmental toxin test	0.559	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triclopyr
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,570	284	Sites	3.8	0.0028	0.073	0.274	16	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	38	2292220	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	53	1	Sites	2	0.03	0.17	0.314	0.35	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	6	1	Sites	17	0.02	0.06	0.104	0.12	µg/L	
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	17	7	Sites	41	0.0027	0.01	0.0393	0.566	µg/L	
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	5,991	329	Sites	5	0.005	0.0885	0.5	55.3	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	219	21	Sites	10	0.00266	0.00266	0.0164	3.6	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	12	7	Sites	58	0.0027	0.00999	0.0507	0.847	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	213	82	Sites	38	0.05	0.207	1.5	250	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	6	Sites	16	0.0198	0.148	2.9	5.641	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	690	1	Sites	0.14	0.246	0.246	0.246	0.246	µg/L	
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	126	13	Samples	10				3.1	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000219	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.5412	days	
Boiling point	OPERA QSAR	307.122	degree C	
Boiling point	TEST QSAR	325.714	degree C	
Vapor pressure	OPERA QSAR	0.00000127	mmHg	
Vapor pressure	TEST QSAR	0.00000741	mmHg	
Solubility in water	OPERA QSAR	1152459.431	µg/L	
Solubility in water	TEST QSAR	291084.6646	µg/L	
Bioconcentration factor	OPERA QSAR	3.14579	no units	
Bioconcentration factor	TEST QSAR	6.223	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	46.9332	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	2.51575	no units	
Henry's Law constant	OPERA QSAR	1.34E-09	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triclopyr

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
319	USEPA. 2019. Triclopyr, Triclopyr Butoxyethyl Ester, and Triclopyr Salts. Human Health Draft Risk Assessment to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
398	USEPA. 2024. Triclopyr. Human Health Risk Assessment for Section 3 Use on Sugarcane. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D466771. USEPA. 2019. Triclopyr, Triclopyr Butoxyethyl Ester, and Triclopyr Salts. Human Health Draft Risk Assessment to Support Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Triclosan

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CONTAMINANT IDENTIFYING INFORMATION

Name:	Triclosan
CASRN:	3380-34-5
DTXSID:	DTXSID5032498
Use:	Antiseptic/disinfectant/antimicrobial in personal care products and household goods; pesticide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
Not List

Final Hazard Quotient (fHQ)
0.00045

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	reproductive and developmental effects	9	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	380	20% reduction in thyroid hormone T4	all infants	OPP 2018

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.17	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triclosan

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.27	mg/kg/day	OPP 2018	Stoker et al. 2010; Zorilla et al. 2010	20% reduction in thyroid hormone T4	all infants	0.143	380	[302]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www./sdwa/2021-human-health-benchmarks-pesticides), however, an assessment providing new information has been published since that time and has been used to derive an HRL.
Cancer Classification (CC)	NL		OPP 2018						[302]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	2	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.3	mg/kg/day	EPA HHBP	
Acute/Short-term Health-Based Guidance Value	0.05	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.05	mg/l	MN DOH	
Health-Based Screening Level	2	mg/l	Health-based screening levels from USGS	
Subchronic Health-Based Guidance Value	0.05	mg/l	MN DOH	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3700	mg/kg	NIH HSDB	min
LD50	4530	mg/kg	NIH HSDB	max
LOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	300	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	15	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	300	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	43	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	25	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	900	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	6.48	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	900	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0000468	mol/kg	TEST QSAR	
Ames mutagenicity test	0.402	no units	TEST QSAR	
Developmental toxin test	0.627	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triclosan
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	566	31	Sites	5.5	0.01	0.04	0.17	0.56	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	0

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	2	Sites	4	0.02	0.025	0.029	0.03	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	2	1	Sites	50	3	3	3	3	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	0	Sites	0						
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	5	Samples	62	0	1.4e-06		5.96e-05 ± 2.57e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	3	1	Sites	33	3	3	3	3	µg/L	
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,205	335	Sites	10	0.0015	0.09	0.27	15.6	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	11	0	Sites	0						
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	12		0.00271		0.0035	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	23	Sites	61	0.00152	0.0146	0.0928	0.534	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	5	Samples	62	0	3.3e-06		0.0001058 ± 6.31e-05	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Battaglin et al. 2018 (Ambient) [41]	2012 – 2013	67	2	Samples	3				0.08	µg/L	
Maruya et al. 2016 (Ambient) [104]	2013	9	1	Sites	11	0.0384	0.0384	0.0384	0.0384	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	4	Sites	19	0.04	0.103	0.163	0.165	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		Prevalence				Magnitude					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	8	Sites	38	0.12	0.28	0.949	0.97	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000193	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	135	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	4.50619	days	
Boiling point	OPERA QSAR	342.341	degree C	
Boiling point	TEST QSAR	369.746	degree C	
Vapor pressure	OPERA QSAR	0.000000246	mmHg	
Vapor pressure	TEST QSAR	0.00000453	mmHg	
Solubility in water	OPERA QSAR	9989.13	µg/L	
Solubility in water	TEST QSAR	1314.5116	µg/L	
Bioconcentration factor	OPERA QSAR	52.8927	no units	
Bioconcentration factor	TEST QSAR	1698.24	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	36570.1	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.7624	no units	
Henry's Law constant	OPERA QSAR	6.52E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triclosan

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
41	Battaglin, W.A., Bradley, P.M., Iwanowicz, L., Journey, C.A., Walsh, H.L. and Blazer, V.S., 2018. Pharmaceuticals, hormones, pesticides, and other bioactive contaminants in water, sediment, and tissue from rocky mountain national park, 2012–2013. Science of the Total Environment, 643, pp.651-673.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
302	USEPA. 2018. Triclosan Human Health and Ecological Draft Risk Assessment (DP No. 449415, 449416). U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, DC.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Trifloxystrobin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Trifloxystrobin
CASRN:	141517-21-7
DTXSID:	DTXSID4032580
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.000043

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
5	reproductive and developmental effects	9	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	220	maternal: decreased body weight and histopathological lesions in the liver, kidney, and spleen; offspring: decreased pup body weights during lactation	general population	OPP 2023; OPP 2020

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.00953	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Trifloxystrobin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.038	mg/kg/day	OPP 2023; OPP 2020	MRID: 44496710	maternal: decreased body weight and histopathological lesions in the liver, kidney, and spleen; offspring: decreased pup body weights during lactation	general population	0.0338	220	[393]; [353]	Note: This pesticide has an existing 2021 Human Health Benchmark for Pesticides (https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides). A newer (2023) OPP assessment exists but does not contribute new data for HRL.
Cancer Classification (CC)	NL		OPP 2023; OPP 2020						[393]; [353]	NL = Not likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	71	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	2.5	mg/kg/day	EPA HHBP	
Health-Based Screening Level	0.24	mg/l	Health-based screening levels from USGS	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	4000	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
LOAEL	29.7	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	3.51	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	274	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	27	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	127	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	618	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	30	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	618	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Trifloxystrobin
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	2,260	71	Sites	3	0.00013	0.00136	0.00953	3.67	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	48	1038552	2019

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Ambient Water		Prevalence				Magnitude					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,043	76	Sites	4	0.00011	0.00155	0.0114	0.486	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	105	10	Sites	10	0.02	0.046	0.174	0.203	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	1	Sites	3	0.045	0.045	0.045	0.045	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	584	1	Sites	0.17	0.0006	0.0006	0.0006	0.0006	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.039	0.0424	0.0451	0.0458	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000102	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Trifloxystrobin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
353	USEPA. 2020. Trifloxystrobin. Acute and Chronic Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for Petition for the Establishment of Permanent Tolerances and Registration for Use on Dried Shelled Pea and Bean, Except Soybean (Subgroup 6C). U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.. DP Barcode: 454641.
393	USEPA. 2023. Trifloxystrobin. Human Health Risk Assessment for Proposed New Uses on Bulb Onion (Subgroup 3-07 A), Green Onion (Subgroup 3-07B), and Individual Commodities of Proposed Subgroup 6-1 8A, and for Crop Group Conversions and Expansions. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.. DP Barcode: D463346.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Trifluralin

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Trifluralin
CASRN:	1582-09-8
DTXSID:	DTXSID4021395
Use:	Herbicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.0024

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	carcinogen with linear mode of action	9	2

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	10	Thyroid, Kidney, Urinary Bladder tumors in Fischer 344 rats (F)	general population	OPP 2023

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.024	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Trifluralin

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.024	mg/kg/day	OPP 2023	MRID: 42447001	Decreases in body weight, body weight gain, abnormal stool, decreased erythrocytes and hemoglobin and increased thrombocytes.	general population	0.0338	140	[394]	
Cancer Slope Factor (CSF)	0.00296	$(mg/kg/day)^{-1}$	OPP 2023	(TXR No. 00052534)	Thyroid, Kidney, Urinary Bladder tumors in Fischer 344 rats (F)	general population	0.0338	10	[394]	
Cancer Classification (CC)	C		OPP 2023						[394]	C = Possible human carcinogen

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	0.08	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Drinking Water Guideline Value	0.02	mg/l	WHO Drinking Water Quality Guidelines	
Lifetime Health Advisory	0.004	mg/l	EPA DWSHA 2018	10-6 cancer risk value
Lifetime Health Advisory	0.01	mg/l	EPA DWSHA 2018	Non-cancer lifetime health advisory
Cancer Classification (CC)	Female.Mice P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats N	no units	HHS NTP	N = No (negative) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	500	mg/kg	NIH HSDB	min
LD50	10000	mg/kg	NIH HSDB	max
LOAEL	3.8	mg/kg/day	EPA Toxicity Reference Database	min
LOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	0.8	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	500	mg/kg/day	EPA Toxicity Reference Database	max
Percent of active toxcast in vitro assays tested	13	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	392	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	421	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	154	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	421	mg/kg/day	EPA Toxicity Reference Database	max
TD50	263	mg/kg/day	NIH CPDB	min
TD50	5440	mg/kg/day	NIH CPDB	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0136773	mol/kg	TEST QSAR	
Ames mutagenicity test	0.445	no units	TEST QSAR	
Developmental toxin test	1.145	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Trifluralin

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	9,173	466	Sites	5	0.001	0.005	0.024	1.74	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	46	8713567	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	17	17,578

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	57	1	Sites	2	0.005	0.005	0.005	0.005	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	60	0	Sites	0						
Drinking Water Monitoring Data - WA (Finished)	2006 - 2011	481	0	Sites	0						
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	23	0	Sites	0						
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	7	0.0025	0.0025	0.0025	0.0375	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	604	3	Sites	0.5	0.5	31	174	210	µg/L	
Drinking Water Monitoring Data - WA (Ambient)	2006 - 2011	635	0	Sites	0						
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	12,920	623	Sites	5	0.00006	0.005	0.02	0.8	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	0	Sites	0						
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	8	0	Sites	0						
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	255	21	Sites	8	0.023	0.178	0.572	3.3	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	15	Sites	39	0.0000275	0.000138	0.0188	0.0473	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	106	0	Sites	0						
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
USGS, McKenzie River, Oregon, 2012 (Ambient) [138]	2002 - 2010	133	3	Samples	2				0.002	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	1	Sites	5	0.0202	0.0202	0.0202	0.0202	µg/L	
Waste Water Effluent		Prevalence				Magnitude					

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		5.59E-08	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.54656	days	
Boiling point	OPERA QSAR	365.044	degree C	
Boiling point	TEST QSAR	369.442	degree C	
Vapor pressure	OPERA QSAR	0.000046	mmHg	
Vapor pressure	TEST QSAR	0.00000292	mmHg	
Solubility in water	OPERA QSAR	284.99055	µg/L	
Solubility in water	TEST QSAR	670.566	µg/L	
Bioconcentration factor	OPERA QSAR	2279.43	no units	
Bioconcentration factor	TEST QSAR	149.624	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	15764.7	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	5.3382	no units	
Henry's Law constant	OPERA QSAR	0.000102672	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Trifluralin

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
138	Reconnaissance of Land-Use Sources of Pesticides in Drinking Water, McKenzie River, Oregon. U.S. Geological Survey Scientific Investigations Report 2012–5091, 46 p. plus appendixes.
394	USEPA. 2023. Trifluralin: Acute, Chronic, and Cancer Aggregate Dietary (Food and Drinking Water) Exposure and Risk Assessments for the Section 3 Tolerance without U.S. Registration in/on Imported Tea. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C. DP Barcode: D467119.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Triphenyl phosphate

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Triphenyl phosphate
CASRN:	115-86-6
DTXSID:	DTXSID1021952
Use:	Plasticizer, fire-retardant, and substitute for camphor in celluloid; also used in lubricating oils and hydraulic fluids
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.00005

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
3	reproductive and developmental effects	9	3

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
SL	1400	increase in relative brain size in offspring from postnatal day (PND) 56; inhibition of blood and brain acetylchloinesterase and butyryl cholinesterase activity in offspring of PND 28	all infants	Rapid Systematic Review

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.07	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triphenyl phosphate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
			USEPA 2020						[341]	Scoping documents are not risk evaluations so no toxicity values are derived from the OPPT docs
			ATSDR 2012						[21]	TPP. No MRLs were derived for TPP due to inadequacies of the database available for review; specifically, no toxicity was reported. Information regarding acute exposure to TPP was limited to lethal dose studies aimed mainly at determining LD50 values. Information regarding intermediate-duration exposure was limited to an early study by Sutton et al. (1960) who treated rats with up to 416 mg TPP/kg/day via the diet for 35 days and reported no hematological effects or alterations in body weight or in the weight of the liver and kidneys; no further endpoints were evaluated. No chronic-duration studies with TPP were located in the literature available for review.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.98	mg/kg/day	Rapid Systematic Review	Witchey et al. 2023	increase in relative brain size in offspring from postnatal day (PND) 56; inhibition of blood and brain acetylchloinesterase and butyryl cholinesterase activity in offspring of PND 28	all infants	0.143	1400	[422]	Note: NOAEL/1000 used in place of the RfD - NOAEL obtained from rapid systematic literature review from a study rated with mixed confidence but assigned overall adequate. Seven good/adequate ratings are coupled with two deficient ratings, and both deficient ratings concern confounding.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Cardiovascular, Hepatic, Metabolic	0.01	Cui, 2022	Nervous	980	Witchey, 2023	8/1/2019	12/6/2024	463	16	18	15

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1320	mg/kg	NIH HSDB	min
LD50	5000	mg/kg	NIH HSDB	max
Percent of active toxcast in vitro assays tested	24	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00691831	mol/kg	TEST QSAR	
Ames mutagenicity test	0.31	no units	TEST QSAR	
Developmental toxin test	0.5	no units	TEST QSAR	
Androgen receptor bioactivity	Category 2 - 0.001 to <0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 2 - 0.01 to <0.1	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Triphenyl phosphate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	566	50	Sites	8.8	0.01	0.02	0.07	0.14	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 10,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	11	Sites	22	0.01	0.04	0.15	0.26	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	2	Sites	29	0.01	0.01	0.01	0.01	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,191	616	Sites	19	0.01	0.03	0.09	3.27	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	0						
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	17	Sites	45	0.0041	0.0256	0.053	0.0608	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	1	Sites	50						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	18	Sites	86	0.008	0.109	0.272	0.437	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	0	Sites	0						
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	13	Sites	62	0.071	0.11	0.184	0.19	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000023	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	6.10807	days	
Boiling point	OPERA QSAR	403.986	degree C	
Boiling point	TEST QSAR	385.59	degree C	
Vapor pressure	OPERA QSAR	0.00000628	mmHg	
Vapor pressure	TEST QSAR	0.00000275	mmHg	
Solubility in water	OPERA QSAR	1912.04768	µg/L	
Solubility in water	TEST QSAR	2776.71088	µg/L	
Bioconcentration factor	OPERA QSAR	189.984	no units	
Bioconcentration factor	TEST QSAR	50.67	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	21731.8	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	4.58923	no units	
Henry's Law constant	OPERA QSAR	0.00000186	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triphenyl phosphate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
21	ATSDR. 2012. Toxicological Profile for Phosphate Ester Flame Retardants. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
341	USEPA. 2020. Final Scope of the Risk Evaluation for Triphenyl Phosphate (TPP) CASRN 115-86-6. U.S. Environmental Protection Agency, Office of Chemical Safety and Environmental Protection Agency Pollution Prevention, Washington, DC. EPA Document# EPA-740-R-20-010.
422	Witchey SK, Sutherland V, Collins B, Roberts G, Shockley KR, Vallant M, Krause J, Cunny H, Waidyanatha S, Mylchreest E, Sparrow B, Moyer R, Behl M. 2023. Reproductive and developmental toxicity following exposure to organophosphate ester flame retardants and plasticizers, triphenyl phosphate and isopropylated phenyl phosphate, in Sprague Dawley rats. Toxicological Sciences 191:374-386.

Tris(2-butoxyethyl) phosphate
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tris(2-butoxyethyl) phosphate
CASRN:	78-51-3
DTXSID:	DTXSID5021758
Use:	Primary plasticizer for most resins and elastomers; floor finishes and waxes; flame-retarding agent.
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.0014

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	9	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	500	hepatocyte vacuolization in male rats	general population	ATSDR 2012

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.7	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tris(2-butoxyethyl) phosphate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.09	mg/kg/day	ATSDR 2012	Reyna MS, Thake DG 1987	hepatocyte vacuolization in male rats	general population	0.0338	500	[21]	Note: Intermediate oral MRL based on rat study duration of 18 weeks (>10% of lifetime). Total uncertainty factor of 100 (10 for animal to human extrapolation and 10 for human variability).

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.25	mg/kg/day	ECHA 2010	Reyna MS, Thake DG 1987	liver effects	general population	0.0338	1500	[56]	total "assessment factor" (similar to UFs) of 80. No assessment document just the dossier. Based on ATSDR assessment, this study appears to be the intermediate study used as the basis of the intermediate MRL.

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
						9/1/2011	10/22/2019	148	0	4	

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Minimal Risk Level (MRL)	4.8	mg/kg/day	CDC ATSDR	
Acute/Short-term Health-Based Guidance Value	0.03	mg/l	MN DOH	
Chronic Health-Based Guidance Value	0.03	mg/l	MN DOH	
Intermediate Minimal Risk Level (MRL)	0.09	mg/kg/day	CDC ATSDR	
Subchronic Health-Based Guidance Value	0.03	mg/l	MN DOH	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	3000	mg/kg	NIH HSDB	
Percent of active toxcast in vitro assays tested	8	percent	EPA Chemistry Dashboard	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.0127938	mol/kg	TEST QSAR	
Ames mutagenicity test	0.045	no units	TEST QSAR	
Developmental toxin test	0.501	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Tris(2-butoxyethyl) phosphate
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	565	55	Sites	9.7	0.07	0.3	0.7	9.9	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000 - 20,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	47	6	Sites	13	0.1	0.2	0.2	0.2	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	2	Sites	29	0.1	0.1	0.18	0.2	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,190	740	Sites	23	0.04	0.4	1.59	306	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	4		0.47		0.47	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	10	Sites	26	0.244	0.488	0.835	1.11	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	0	Sites	0						
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	20	Sites	95	0.259	1.12	5.57	13.5	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	1	Sites	5				0.05	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	17	Sites	81	0.4	2.9	14.4	19	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.0000451	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.67992	days	
Boiling point	OPERA QSAR	345.388	degree C	
Boiling point	TEST QSAR	353.92	degree C	
Vapor pressure	OPERA QSAR	0.0000171	mmHg	
Vapor pressure	TEST QSAR	0.00000378	mmHg	
Solubility in water	OPERA QSAR	1095676.268	µg/L	
Solubility in water	TEST QSAR	236266.9752	µg/L	
Bioconcentration factor	OPERA QSAR	5.75762	no units	
Bioconcentration factor	TEST QSAR	6.09537	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	12390.5	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.7494	no units	
Henry's Law constant	OPERA QSAR	0.00000729	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tris(2-butoxyethyl) phosphate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
21	ATSDR. 2012. Toxicological Profile for Phosphate Ester Flame Retardants. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
56	ECHA. 2020. Registration Dossier for Tris(2-butoxyethyl) phosphate. European Chemicals Agency (ECHA), Helsinki, Finland. https://echa.europa.eu/registration-dossier/-/registered-dossier/14166/10 Accessed 2/5/2020.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.

Tris(2-chloroethyl) phosphate
CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tris(2-chloroethyl) phosphate
CASRN:	115-96-8
DTXSID:	DTXSID5021411
Use:	Flame-retardant in plastics and urethanes
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.12

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	carcinogen with linear mode of action	10	4

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1.21	renal tubule adenomas or carcinomas in male F344 rats	general population	OPPT 2024

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
0.14	90th Percentile	All Ambient Water	NAWQA	1991-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tris(2-chloroethyl) phosphate

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.2	mg/kg/day	ATSDR 2012	NTP 1991	renal tubule epithelial hyperplasia in female rats	general population	0.0338	1000	[21]	
Reference Dose (RfD) or Equivalent	0.007	mg/kg/day	PPRTV 2009	Matthews et al. 1990; NTP 1991	increased absolute and relative liver and kidney weights	general population	0.0338	40	[234]	
Cancer Slope Factor (CSF)	0.02	$(mg/kg/day)^{-1}$	PPRTV 2009	NTP 1991; Matthews et al. 1993	combined incidence of renal tubular cell adenomas and carcinomas	general population	0.0338	1	[234]	
Cancer Slope Factor (CSF)	0.0245	$(mg/kg/day)^{-1}$	OPPT 2024	NTP 1991	renal tubule adenomas or carcinomas in male F344 rats	general population	0.0338	1.21	[397]	
Reference Dose (RfD) or Equivalent	2.73	mg/kg/day	OPPT 2024	Johnson et al. 2003; Chen et al. 2015	decreased numbers of seminiferous tubules	general population	0.0338	16200	[397]	
Cancer Classification (CC)	L		PPRTV 2009						[234]	L = Likely to be carcinogenic to humans
Cancer Classification (CC)	L		OPPT 2024						[397]	L = Likely to be carcinogenic to humans

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Gastrointestinal, Hepatic	0.0256	Deng, 2018	Systemic	100	Yang, 2018	9/1/2011	1/28/2020	357	5	3	4

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute/Short-term Health-Based Guidance Value	0.3	mg/l	MN DOH	
Cancer Classification (CC)	3	no units	WHO IARC	3 = Not classifiable as to its carcinogenicity to humans
Chronic Health-Based Guidance Value	0.2	mg/l	MN DOH	Chronic value based on kidney system
Chronic Health-Based Guidance Value	0.0005	mg/l	MN DOH	Chronic value for cancer
Intermediate Minimal Risk Level (MRL)	0.6	mg/kg/day	CDC ATSDR	
Provisional Subchronic RfD	0.02	mg/kg/day	EPA PPRTV	
Subchronic Health-Based Guidance Value	0.2	mg/l	MN DOH	
Cancer Classification (CC)	Female.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Female.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity
Cancer Classification (CC)	Male.Mice EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats P	no units	HHS NTP	P = Clear (positive) evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	1866	mg/kg	NIH HSDB	max
LD50	430	mg/kg	NIH HSDB	min
LOAEL	350	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	88	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	350	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	44	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	2	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	175	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	700	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	700	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	88	mg/kg/day	EPA Toxicity Reference Database	min
TD50	23600000	mg/kg/day	NIH CPDB	max
TD50	39.9	mg/kg/day	NIH CPDB	min

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50	0.00157036	mol/kg	TEST QSAR	
Ames mutagenicity test	0.976	no units	TEST QSAR	
Developmental toxin test	0.483	no units	TEST QSAR	
Androgen receptor bioactivity	Category 1 - <0.001	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Tris(2-chloroethyl) phosphate

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	566	66	Sites	12	0.01	0.06	0.14	0.44	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	50	3	Sites	6	0.01	0.07	0.088	0.1	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	7	2	Sites	29	0.01	0.07	0.124	0.18	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	0						
Padhye et al. 2013 (Finished) [135]	2009 - 2010	8	7	Samples	88	0	3.7e-06		2.04e-05 ± 5.8e-06	µg/L	
USGS, Sioux Falls Area, 2012 (Finished) [122]	2009 - 2010	1	0	Sites	0						
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	3,196	823	Sites	26	0.01	0.08	0.23	610	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	4		0.065		0.065	µg/L	
Bradley et al. 2017 (Ambient) [43]	2012 - 2014	38	15	Sites	39	0.0416	0.18	0.282	0.487	µg/L	
Padhye et al. 2013 (Ambient) [135]	2009 - 2010	8	7	Samples	88	0	5.6e-06		5.17e-05 ± 1.9e-06	µg/L	
USGS, Sioux Falls Area, 2012 (Ambient) [122]	2009 - 2010	2	2	Sites	100						
Maruya et al. 2016 (Ambient) [104]	2013	9	7	Sites	78	0.188	0.369	0.664	0.81	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	19	Sites	90	0.016	0.113	0.451	0.657	µg/L	
Schaider et al. 2014 (Ambient) [139]	2009	20	3	Sites	15				0.02	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
Scott et al. 2018 (Wastewater) [140]	2011 - 2017	21	21	Sites	100	0.2	0.415	0.57	0.73	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.00000131	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	3.68021	days	
Boiling point	OPERA QSAR	329.906	degree C	
Boiling point	TEST QSAR	295.075	degree C	
Vapor pressure	OPERA QSAR	0.0608845	mmHg	
Vapor pressure	TEST QSAR	0.000645654	mmHg	
Solubility in water	OPERA QSAR	7021009.476	µg/L	
Solubility in water	TEST QSAR	1447357.907	µg/L	
Bioconcentration factor	OPERA QSAR	1.28864	no units	
Bioconcentration factor	TEST QSAR	5.01187	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	14.5644	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	1.44108	no units	
Henry's Law constant	OPERA QSAR	0.000000126	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tris(2-chloroethyl) phosphate

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
21	ATSDR. 2012. Toxicological Profile for Phosphate Ester Flame Retardants. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
43	Bradley, P. M., Journey, C. A., Romanok, K. M., Barber, L. B., Buxton, H. T., Foreman, W. T., ... & Jones, D. K. (2017). Expanded target-chemical analysis reveals extensive mixed-organic-contaminant exposure in US streams. Environmental science & technology, 51(9), 4792-4802.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
104	Maruya, K.A., Dodder, N.G., Sengupta, A., Smith, D.J., Lyons, J.M., Heil, A.T. and Drewes, J.E., 2016. Multimedia screening of contaminants of emerging concern (CECS) in coastal urban watersheds in southern California (USA). Environmental toxicology and chemistry, 35(8), pp.1986-1994.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
122	Occurrence of anthropogenic organic compounds and nutrients in source and finished water in the Sioux Falls area, South Dakota, 2009–10: U.S. Geological Survey Scientific Investigations Report 2012–5098, 21 p. plus appendixes.
135	Padhye, L.P., Yao, H., Kung'u, F.T., and Huang, C.H. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. 2014. Water Research 51 (2014) 266-276.
139	Schaider, L.A., Rudel, R.A., Ackerman, J.M., Dunagan, S.C. and Brody, J.G., 2014. Pharmaceuticals, perfluorosurfactants, and other organic wastewater compounds in public drinking water wells in a shallow sand and gravel aquifer. Science of the Total Environment, 468, pp.384-393.
140	Scott, T. M., Phillips, P. J., Kolpin, D. W., Colella, K. M., Furlong, E. T., Foreman, W. T., & Gray, J. L. (2018). Pharmaceutical manufacturing facility discharges can substantially increase the pharmaceutical load to US wastewaters. Science of the Total Environment, 636, 69-79.
234	USEPA. 2009. Provisional Peer-Reviewed Toxicity Values for Tris(2-chloroethyl)phosphate (TCEP) (CASRN 115-96-8). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.
397	USEPA. 2024. Risk Evaluation for Tris(2-chloro ethyl) Phosphate (TCEP); CASRN 115-96-8. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.

Triticonazole

CCL 6 Contaminant Information Sheet

EPA - OFFICE OF WATER

FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Triticonazole
CASRN:	131983-72-7
DTXSID:	DTXSID0032655
Use:	Fungicide
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	X
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
Not List	0.16

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	1	1

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	1000	decreased body weight gain and liver toxicity (e.g., hepatocytic large fatty vacuolation)	general population	OPP 2019

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
163		EDWC	OPP	2019

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Triticonazole

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.17	mg/kg/day	OPP 2019	MRID: 4482108	decreased body weight gain and liver toxicity (e.g., hepatocytic large fatty vacuolation)	general population	0.0338	1000	[328]	Note: The HRL is based on the EPA's Human Health Benchmarks for Pesticides (see https://www./sdwa/2021-human-health-benchmarks-pesticides for more information)
Cancer Classification (CC)	NL		OPP 2019						[328]	NL = Not likely to be carcinogenic to humans.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute Human Health Benchmark	10	mg/l	EPA HHBP	
Acute Population-Adjusted Dose (PAD)	0.5	mg/kg/day	EPA HHBP	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	
LOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
LOAEL	50	mg/kg/day	EPA Toxicity Reference Database	min
NOAEL	1000	mg/kg/day	EPA Toxicity Reference Database	max
NOAEL	17.4	mg/kg/day	EPA Toxicity Reference Database	min
Percent of active toxcast in vitro assays tested	12	percent	EPA Chemistry Dashboard	
Subchronic LOAEL	19.8	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic LOAEL	2368.8	mg/kg/day	EPA Toxicity Reference Database	max
Subchronic NOAEL	2	mg/kg/day	EPA Toxicity Reference Database	min
Subchronic NOAEL	2368.8	mg/kg/day	EPA Toxicity Reference Database	max

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test	0.543	no units	TEST QSAR	
Developmental toxin test	0.597	no units	TEST QSAR	
Androgen receptor bioactivity	Category 3 - >= 0.1	ar bioactivity category	EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity	Category 1 - <0.01	er bioactivity category	EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Triticonazole
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**						**Magnitude**			
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	13	0	Sites	0						

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)	1	253	2018

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**						**Magnitude**			
USDA Pesticide Data Program (PDP) (Finished)	2001 - 2013	15	1	Sites	6.67	0.0078	0.0078	0.0078	0.25	µg/L	
Ambient Water		**Prevalence**						**Magnitude**			
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	332	2	Sites	0.6	0.0016	0.0342	0.0603	0.0668	µg/L	
USDA Pesticide Data Program (PDP) (Groundwater)	2001 - 2013	218	2	Sites	0.92	0.05	0.441	0.754	0.832	µg/L	
USDA Pesticide Data Program (PDP) (Untreated)	2001 - 2013	10	2	Sites	20	0.0078	0.0739	0.127	0.25	µg/L	
Surface Water Database (SURF) California Dept. of Pesticide Regulation (Ambient) [425]	1990 - 2018	78	0	Sites	0				0	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	NA		Sites	0						
Waste Water Effluent		**Prevalence**						**Magnitude**			

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes
Estimated Drinking Water Concentration, 100-year simulation (chronic)	2020	OPP	163	µg/L	Pesticide Root Zone Model - Ground Water (PRZM-GW)	The modeled groundwater chronic concentration provided by the most recent EPA OPP exposure assessment was selected as the occurrence concentration for triticonazole. This value coincides with the critical effects of decreased body weight gain and liver toxicity provided within the health effects report.

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure		0.000000479	

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR	5.24696	days	
Boiling point	OPERA QSAR	319.575	degree C	
Boiling point	TEST QSAR	373.831	degree C	
Vapor pressure	OPERA QSAR	0.000000314	mmHg	
Vapor pressure	TEST QSAR	9.89E-09	mmHg	
Solubility in water	OPERA QSAR	32316.57324	µg/L	
Solubility in water	TEST QSAR	4576.608	µg/L	
Bioconcentration factor	OPERA QSAR	102.223	no units	
Bioconcentration factor	TEST QSAR	85.5067	no units	
Organic carbon/water partition coeff. (Koc)	OPERA QSAR	1459.84	L/kg	
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR	3.29296	no units	
Henry's Law constant	OPERA QSAR	2.93E-10	atm-m^3/mol	

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Triticonazole

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
328	USEPA. 2019. Triticonazole: Human Health Draft Risk Assessment for Registration Review. U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Washington, D.C.. DP Barcode: D440852.
425	Zhang, X., Ensminger, M., Deng, X., Budd, R., Xie, Y., Wang, D., ... & Goh, K. S. (2019). The Surface Water Database (SURF): A California Database for Surface Water Pesticide Monitoring Data. In Pesticides in Surface Water: Monitoring, Modeling, Risk Assessment, and Management (pp. 215-232). American Chemical Society.

Tungsten

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Tungsten
CASRN:	7440-33-7
DTXSID:	DTXSID8052481
Use:	Metal, in plating material and textiles
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	
FIFRA	
Human Neurotoxicants	

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	1.4

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
6	non-cancer effects	10	5

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	5	glandular stomach goblet cell metaplasia	general population	PPRTV 2015

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
6.77	90th Percentile	All Ambient Water	NWIS	2008-2022

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
				X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Tungsten

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.0008	mg/kg/day	PPRTV 2015	USACHPPM 2007a and b	glandular stomach goblet cell metaplasia	general population	0.0338	5	[261]	
Cancer Classification (CC)	I		PPRTV 2015						[261]	I = Inadequate evidence to determine carcinogenic potential
			ATSDR 2005						[14]	Note: No minimal risk level (MRL) or RfD equivalent derived.

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Immune, Renal, Hematologic	17.7	Frawley, 2016	Respiratory, Systemic	284	Frawley, 2016	9/1/2014	1/21/2020	805	2	29	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Provisional Subchronic RfD	0.008	mg/kg/day	EPA PPRTV	

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Tungsten
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986										
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	6	6	Sites	100	0.06	0.2	1.74	2.3	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	13	7	Sites	54	0.071	0.159	7	13.9	µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	2,355	1407	Sites	60	8e-04	0.224	6.77	5060	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	52	3	Samples	5.77	5.6	10.9	83.1	101.1	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
EPA Ash Database (Wastewater)	1973 - 2014	2	1	Sites	50	0.987	0.987	0.987	5	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	4	Sites	10	20	20	27	30	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)	0.26	µg/L	

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Tungsten

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
14	ATSDR. 2005. Toxicological Profile for Tungsten. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
261	USEPA. 2015. Provisional Peer-Reviewed Toxicity Values for Soluble Tungsten Compounds. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Vanadium

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Vanadium
CASRN:	7440-62-2
DTXSID:	DTXSID2040282
Use:	Use data are for vanadium pentoxide: Chemical intermediate; catalyst; naturally-occurring
Chemical Notes:	This CIS also contains some data for the following: Vanadium, elemental; vanadium compounds; vanadium and compounds; vanadium, total; vanadium pentoxide

Is the contaminant on any lists?	
CERCLA	X
FIFRA	
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision
List

Final Hazard Quotient (fHQ)
31

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
7	non-cancer effects	10	7

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	0.4	kidney toxicity	general population	PPRTV 2009

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
12.4	90th Percentile	Finished Water	UCMR 3	2013 - 2015

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5
X	X	X	X	X

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Vanadium

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.00007	mg/kg/day	PPRTV 2009	Boscolo et al. 1994	kidney toxicity	general population	0.0338	0.4	[235]	
Reference Dose (RfD) or Equivalent	0.01	mg/kg/day	ATSDR 2012	Fawcett et al. 1997	no effects on hematological alterations and blood pressure in humans				[23]	Note: This is an intermediate-duration MRL derived from a 6-12 week study in humans; ATSDR did not derive a chronic oral MRL for vanadium.
Cancer Classification (CC)	D		PPRTV 2009						[235]	D = Not classifiable as to human carcinogenicity

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review
Neurological	38.51	Sun, 2017	Hepatic, Renal	83.7	Wang, 2016	9/1/2011	10/22/2019	1233	19	53	2

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
Acute inhalation Minimal Risk Level (MRL)	0.0008	mg/m^3	CDC ATSDR	
Notification Level	0.015	mg/l	CalEPA OEHHA Chemical Database	vanadium and compounds other than vanadium pentoxide
Chronic Health-Based Guidance Value	0.05	mg/l	MN DOH	
Chronic inhalation Minimal Risk Level (MRL)	0.0001	mg/m^3	CDC ATSDR	
Intermediate Minimal Risk Level (MRL)	0.01	mg/kg/day	CDC ATSDR	
Provisional Subchronic RfD	0.0007	mg/kg/day	EPA PPRTV	vanadium and soluble inorganic compounds other than vanadium pentoxide

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	2000	mg/kg	NIH HSDB	max; vanadium, elemental
LD50	23	mg/kg	NIH HSDB	min; vanadium compounds

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive.
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Vanadium
CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015	4,922	3625	Sites	74	0.2	1.3	12.4	193	µg/L	
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	146	Sites	15	3	7	23	70	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	5,779	4431	Sites	77	0.02	1.4	8.3	154	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)	41	30,274,399

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	10,000,000 - 50,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		Prevalence				Magnitude					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	2	Sites	100	1.3	1.3	1.3	1.3	µg/L	
Drinking Water Monitoring Data - CA (Finished)	2006 - 2020	213	123	Sites	58	0.844	5	12	76	µg/L	vanadium, total
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	30	17	Sites	57	0.12	1.5	16.1	26.6	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25	4	Sites	16		3.4		4.9	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	3		Sites			2.225	4.1		µg/L	
Ambient Water		Prevalence				Magnitude					
Drinking Water Monitoring Data - CA (Ambient)	2006 - 2020	1,704	1279	Sites	75	0.0044	6.68	26	262	µg/L	vanadium, total
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	18,540	11857	Sites	64	0.01	3.1	20	19000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	44		2.3		5.8	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	510	Sites	67	0.08	0.48	13	62.3	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.256353623	1.78	2.81	7.213663	µg/L	vanadium, total
National Produced Waters - USGS (Ambient)	1905 - 2014	107	40	Samples	37	1.2	10	269	993	µg/L	
Waste Water Effluent		Prevalence				Magnitude					
EPA Ash Database (Wastewater)	1973 - 2014	19	16	Sites	84	1.01	33.7	77.8	110	µg/L	vanadium, total
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	19	Sites	48	100	200	620	2300	µg/L	vanadium, total
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	5	Sites	62	2.7	17	30	149	µg/L	vanadium, total
EPA NEWTS Leachate (Wastewater)	2010	39	36	Sites	92	0.158	5	270	260000	µg/L	vanadium, total

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)			
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Vanadium

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
23	ATSDR. 2012. Toxicological Profile for Vanadium. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
235	USEPA. 2009. Provisional Peer-Reviewed Toxicity Values for Vanadium and Its Soluble Inorganic Compounds Other Than Vanadium Pentoxide (CASRN 7440-62-2 and Others), Derivation of Subchronic and Chronic Oral RfDs. EPA/690/R-09/070F. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center, Cincinnati, OH.

Zinc

CCL 6 Contaminant Information Sheet | EPA - OFFICE OF WATER | FEBRUARY 2026

CONTAMINANT IDENTIFYING INFORMATION

Name:	Zinc
CASRN:	7440-66-6
DTXSID:	DTXSID7035012
Use:	Metal, essential mineral
Chemical Notes:	

Is the contaminant on any lists?	
CERCLA	X
FIFRA	X
Human Neurotoxicants	X

CONTAMINANT SUMMARY & DECISION

Draft CCL 6 List Decision	Final Hazard Quotient (fHQ)
List	0.077

ATTRIBUTE SCORE & FINAL HAZARD QUOTIENT INFORMATION

Potency	Severity	Prevalence	Magnitude
4	non-cancer effects	10	9

Health Reference Level (HRL) or CCL Screening Level (SL)	HRL or SL value (µg/L)	Critical Effect	Target Pop.	Assessment Source
HRL	2000	Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers	general population	IRIS 2005

Conc. in water (µg/L)	90th Percentile or Maximum (if measured conc)	Finished or Ambient (FW, SW, GW, WW)	Source	Date
154	90th Percentile	Finished Water	NIRS	1984 - 1986

PUBLIC NOMINATION STATUS

Public Nomination

PAST CCL STATUS

CCL 1	CCL 2	CCL 3	CCL 4	CCL 5

PAST NEGATIVE REGULATORY DETERMINATION STATUS

RD 1	RD 2	RD 3	RD 4
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Basis
Not Applicable

Notes: The final hazard quotient is the ratio of the contaminant's concentration in water to its Health Reference Level (HRL) or CCL Screening Level.

The HRL or CCL Screening Level for carcinogens is equivalent to the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the toxicity value (RfD or equivalent) is divided by an exposure factor (i.e. drinking water intake level) relevant to the target population and critical effect and multiplied by a Relative Source Contribution of 20%.

Zinc

CCL 6 Contaminant Information Sheet

HEALTH EFFECTS DATA

Qualifying Assessments, Exposure Factors, and HRL Determination

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	HRL (µg/L)	Assessment Full Citation	Notes
Reference Dose (RfD) or Equivalent	0.3	mg/kg/day	IRIS 2005	Yadrick et al. 1989; Davis et al. 2000; Milne et al. 2001; Fischer et al. 1984	Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers	general population	0.0338	2000	[210]	
Reference Dose (RfD) or Equivalent	0.3	mg/kg/day	ATSDR 2005	Yadrick et al. 1989	Decreased erythrocyte SOD and serum ferritin levels in women	females of reproductive age	0.0354	2000	[15]	NOTE: "The intermediate-duration oral MRL of 0.3 mg zinc/kg/day has been accepted as the chronic oral MRL." Based on "Statistically significant decreases in erythrocyte SOD and serum ferritin levels at 0.83 mg supplemental zinc/kg/day. Since these effects were subclinical, they were designated as non-adverse." "The MRL is based on soluble zinc salts; it is less likely that nonsoluble zinc compounds would have these effects at similar exposure levels"
Reference Dose (RfD) or Equivalent			HC 1987						[78]	Note: The aesthetic objective for zinc in drinking water is less than or equal to 5.0 mg/L.
Reference Dose (RfD) or Equivalent			WHO 2003						[411]	Note: A provisional maximum tolerable daily intake of (PMTDI) of 1.0 mg/kg by JECFA (in 1982) was stated.
Cancer Classification (CC)	I		IRIS 2005						[210]	I = Inadequate evidence to determine carcinogenic potential

Non-Qualifying Assessments, Exposure Factors, and CCL Screening Level Determinations

Data Element	Value	Units	Assessment Source	Critical Study	Critical Effect	Target Population	Exposure Factor (L/kg-day)	CCL Screening Level (µg/L)	Assessment Full Citation	Notes

Literature Search Summary

Lowest LOAEL Health Effects	Lowest LOAEL (mg/kg bw/day)	Lowest LOAEL Study	Highest NOAEL Health Effects	Highest NOAEL (mg/kg bw/day)	Highest NOAEL Study	Start Date of Search	End Date of Search	No. Unique References identified in lit search	No. Animal Studies passed Title-abstract Screen	No. Human Studies passed Title-abstract Screen	No. PECO Relevant Studies passed full-text review

Other Health Data

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
10-day Health Advisory	6	mg/l	EPA DWSHA 2018	
Chronic Health-Based Guidance Value	2	mg/l	MN DOH	
Human Health Ambient Water Quality Criteria	7.4	mg/l	EPA Human Health Criteria for CWA	
Intermediate Minimal Risk Level (MRL)	0.3	mg/kg/day	CDC ATSDR	
Lifetime Health Advisory	2	mg/l	EPA DWSHA 2018	
Cancer Classification (CC)	Female.Rats NE	no units	HHS NTP	NE = No (negative) evidence of carcinogenicity
Cancer Classification (CC)	Male.Rats EE	no units	HHS NTP	EE = Equivocal evidence of carcinogenicity

Data Element	Value	Units	Source	Notes
Measured Data and Assessment Results				
LD50	630	mg/kg	NIH HSDB	

Data Element	Value	Units	Source	Notes
Modeled Data				
LD50			TEST QSAR	
Ames mutagenicity test			TEST QSAR	
Developmental toxin test			TEST QSAR	
Androgen receptor bioactivity			EPA EDSP	Androgen = AUC >= 0.1 are likely in vivo active, 0.1-0.001 is ambiguous activity, <0.001 is likely in vivo inactive
Estrogen receptor bioactivity			EPA EDSP	Estrogen = AUC >= 0.1 are likely in vivo active, 0.1-0.01 is ambiguous activity, <0.01 is likely in vivo inactive.

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
The full citation for the critical study is provided in the corresponding health assessment.
PECO = Population, Exposure, Comparator, Outcome.

Zinc

CCL 6 Contaminant Information Sheet

OCCURRENCE DATA

Scoring Data

Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
Unregulated Contaminant Monitoring Rule (UCMR) 5	2023 - 2024										
Unregulated Contaminant Monitoring Rule (UCMR) 4	2018 - 2020										
Unregulated Contaminant Monitoring Rule (UCMR) 3	2013 - 2015										
Unregulated Contaminant Monitoring Rule (UCMR) 2	2008 - 2010										
Unregulated Contaminant Monitoring Rule (UCMR) 1	2001 - 2003										
National Inorganics and Radionuclides Survey (NIRS)	1984 - 1986	989	877	Sites	89	3	22	154	1217	µg/L	
Unregulated Contaminant Monitoring-State (UCM-State) Round 2	1993 - 1997										
Unregulated Contaminant Monitoring-State (UCM-State) Round 1	1988 - 1992										
Ambient Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Ambient)	1991 - 2022	7,483	5991	Sites	80	0.3	6.1	50	9660	µg/L	

Pesticide Application Data	Number of States	Amount Applied (lbs/year)	Date
Estimated Annual Agricultural Pesticide Use (USGS)			

Toxic Release Data	Number of States	Amount Released (lbs/year)
Toxic Release Inventory (TRI) Program (EPA) (2021)		

Chemical Production Data	Production Volume (lbs/year)
Chemical Data Reporting (CDR) Results (EPA) (2018)	1,000,000,000 – <5,000,000,000

Non-Scoring Data

Non-Nationally Representative Water Data	Date	Number of PWS/ Sites/ Samples	Number of Detects	PWS/ Sites/ Samples	Percent with Detects	Minimum Conc. (Detects)	Median Conc. (Detects)	90th Percentile (Detects)	Maximum Conc. (Detects)	Conc. Units	Notes
Finished Water		**Prevalence**				**Magnitude**					
National Water Quality Assessment (USGS NAWQA) (Finished)	1991 - 2022	2	1	Sites	50	85.6	85.6	85.6	85.6	µg/L	
National Water Information System (USGS NWIS) (Finished)	2008 - 2022	42	35	Sites	83	0.5	27.4	164	3800	µg/L	
Bradley et al. 2018 (Finished) [44]	2016	26	23	Sites	88	2.32	9.63	123	749.2	µg/L	
Glassmeyer et al 2017 (Finished) [72]	2007 - 2012	25		Sites	68		1.3		100	µg/L	
Community Water System Survey (CWSS) (Finished) [144]	2006	1		Sites			254	254		µg/L	
Ambient Water		**Prevalence**				**Magnitude**					
National Water Information System (USGS NWIS) (Ambient)	2008 - 2022	31,263	23043	Sites	74	0.06	12	160	2300000	µg/L	
Glassmeyer et al 2017 (Ambient) [72]	2007 - 2012	25		Sites	96		3.3		23	µg/L	
Arnold et al. 2016 (Filtered) [2]	2012 - 2013	757	437	Sites	58	1.4	4.8	28.3	401	µg/L	
Masoner et al. 2019 (Urban Stormwater) (Ambient) [105]	2016 - 2017	21	21	Sites	100	0.828134957	14.8	65.6	188.836224	µg/L	
NEWTS Brackish Water - USGS (Ambient)	1901 - 2013	7,389	7376	Samples	99.8	0.05	49	960	1220000	µg/L	
National Produced Waters - USGS (Ambient)	1905 - 2014	1,519	1186	Samples	78	0.1	240	9280	575000	µg/L	
Waste Water Effluent		**Prevalence**				**Magnitude**					
EPA Ash Database (Wastewater)	1973 - 2014	94	81	Sites	86	0.6	40	175	2700	µg/L	
NEWTS Coal Mine Drainage - USGS (Wastewater)	2011	40	40	Sites	100	1700	13150	198000	380000	µg/L	
EPA NEWTS Flue-gas desulfurization effluent (Wastewater)	2007 -2014	8	6	Sites	75	2	15.5	77.4	1350	µg/L	
NEWTS Geothermal - DOE (Wastewater)	2016 - 2018	4	2	Samples	50	606	689	755	772	µg/L	
EPA NEWTS Leachate (Wastewater)	2010	39	33	Sites	85	0.2	9.13	90.2	9400	µg/L	

Estimated Concentration in Water	Date	Source	Value	Units	Model	Notes

Predicted Exposure Data (EPA CompTox Dashboard)	Date	Total Predicted Exposure (mg/kg-bw/day)	Notes
Expocast exposure			

Biomonitoring Data	Detection at 90th Percentile	Units	Notes
NHANES biomonitoring detection in serum (1999-2016)	99.4	µg/dl	
NHANES biomonitoring detection in blood (1999-2016)			
NHANES biomonitoring detection in urine (1999-2016)			

Modeled Environmental Fate Parameters (EPA CompTox Dashboard)	Source	Value	Units	Notes
Biodegradation half-life	OPERA QSAR			
Boiling point	OPERA QSAR			
Boiling point	TEST QSAR			
Vapor pressure	OPERA QSAR			
Vapor pressure	TEST QSAR			
Solubility in water	OPERA QSAR			
Solubility in water	TEST QSAR			
Bioconcentration factor	OPERA QSAR			
Bioconcentration factor	TEST QSAR			
Organic carbon/water partition coeff. (Koc)	OPERA QSAR			
Octanol/water partitioning coeff. (log Kow)	OPERA QSAR			
Henry's Law constant	OPERA QSAR			

Notes: Highlighted data indicate value was used in attribute scoring.
Blank fields indicate there were no data available.
"All Water" data from NWIS and NAWQA are combined surface water and groundwater data.
Monitoring dates for non-scoring data and NAWQA are not chemical-specific and may not contain samples for all years listed.
State Drinking Water Monitoring Data with a max date range of 2020 may contain few samples from early 2020.

Zinc

CCL 6 Contaminant Information Sheet

Reference Number	Full Reference
2	Arnold, T.L., DeSimone, L.A., Bexfield, L.M., Lindsey, B.D., Barlow, J.R., Kulongoski, J.T., Musgrove, MaryLynn, Kingsbury, J.A., and Belitz, Kenneth, 2016, Groundwater quality data from the National Water-Quality Assessment Project, May 2012 through December 2013 (ver. 1.1, November 2016): U.S. Geological Survey Data Series 997, 56 p., http://dx.doi.org/10.3133/ds997.
15	ATSDR. 2005. Toxicological Profile for Zinc. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), Atlanta, GA.
44	Bradley, P. M., Kolpin, D. W., Romanok, K. M., Smalling, K. L., Focazio, M. J., Brown, J. B., ... & Dietze, J. E. (2018). Reconnaissance of mixed organic and inorganic chemicals in private and public supply tapwaters at selected residential and workplace sites in the United States. Environmental science & technology, 52(23), 13972-13985.
72	Glassmeyer, S.T., Furlong, E.T., Kolpin, D.W., Batt, A.L., Benson, R., Boone, J.S., ... & Wilson, V.S. (2017). Nationwide reconnaissance of contaminants of emerging concern in source and treated drinking waters of the United States. Science of The Total Environment. v581-582, (909-922).
78	HC. 1987. Zinc. Health Canada (HC), Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Ottawa, Ontario, Canada.
105	Masoner. Urban Stormwater: An Overlooked Pathway of Extensive Mixed Contaminants to Surface and Groundwaters in the United States. Environmental Science & Technology 53(17):10070–81. https://doi.org/10.1021/acs.est.9b02867.
144	USEPA (US Environmental Protection Agency). (2009). 2006 Community Water System Survey. Overview, 57.
210	USEPA. 2005. Toxicological Review Of Zinc and Compounds (CAS No. 7440-66-6) In Support of Summary Information on the Integrated Risk Information System (IRIS); CASRN 106-44-5. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Integrated Risk Information System (IRIS), Washington, DC. EPA/635/R-05/002
411	WHO. 2003. Zinc in Drinking-water. Background document for development of WHO Guidelines for Drinking-water Quality. World Health Organization, Geneva, Switzerland.

Appendix B – Contaminant Information Sheet References

[1] American Cyanamid Company, 1986

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