

Hazardous Substance and Waste Sites

Indicator Names

- *Superfund Sites, Count in Watershed (WS)*
- *Risk Management Plan Sites, Count in Watershed (WS)*
- *Hazardous Waste Management Sites, Count in Watershed (WS)*

Indicator Category | **Stressor**

Subcategory | *Hazardous Waste & Wastewater*

Available in RPS Tool files for all lower 48 states

Indicator Description

Background

Hazardous substances and waste have properties that make them dangerous and capable of having a harmful effect on human health or the environment.¹ As part of efforts to ensure proper management of hazardous materials, the US Environmental Protection Agency (EPA) maintains information on certain sites where hazardous substances and waste have been, or could potentially be, released into the environment.

What the Indicators Measure

These indicators measure site counts in a HUC12 subwatershed* for three types of sites that are relevant to hazardous substance and waste management:

- ***Superfund Sites, Count in Watershed (WS)*** – number of sites in the HUC12 that are tracked by the EPA Superfund program, which is responsible for cleaning up the nation's most contaminated land and responding to environmental emergencies, oil spills, and natural disasters.²
- ***Risk Management Plan Sites, Count in WS*** – number of sites in the HUC12 that are required to create and submit to EPA a Risk Management Plan (RMP) for hazardous substances or waste. Under Clean Air Act amendments, facilities are required to submit a RMP if they hold more than a threshold quantity of certain regulated substances.³ A map of RMP site counts is provided in Figure 1.
- ***Hazardous Waste Management Sites, Count in WS*** – number of sites in the HUC12 that are defined and regulated as Hazardous Waste Management (HWM) sites under the Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) permitting program.⁴ These sites may: hold hazardous waste (storage); change the physical, chemical, or biological characteristics of waste to minimize its environmental threat (treatment); or deposit hazardous waste on land or in water (disposal).

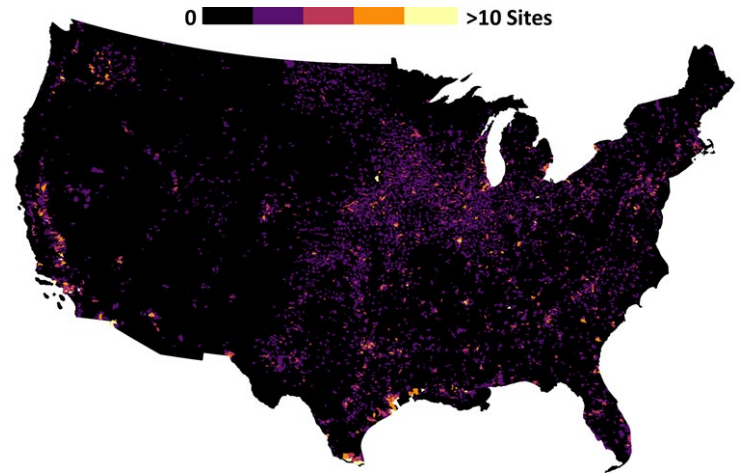


Figure 1. Map of Risk Management Plan Sites, Count in Watershed for HUC12s across the contiguous US.

Relevance to Water Quality Restoration and Protection

The potential for exposure of human populations to hazardous materials can be a factor for assessing social vulnerability and selecting priority HUC12s for water quality restoration and protection initiatives. The presence of Superfund, RMP, and HWM sites does not necessarily mean that hazardous chemicals are harming a population or the environment. These facilities are regulated to prevent harm to the environment and human health. However, allowable discharges and accidental chemical releases still occur. Such releases can contaminate waterbodies and impact people and wildlife. Living near these types of sites has been associated with higher risk of exposure to potentially hazardous chemicals and negative health outcomes.⁵

Some minority and low-income populations may be at higher risk of exposure to hazardous substances and waste. For instance, studies have found that minority and low-income neighborhoods are disproportionately selected for locating HWM facilities.⁶ Similarly, another study found that higher risk hazardous waste sites tend to be in counties with higher income inequality and larger minority populations.⁷

These indicators can be used to evaluate the relative potential for exposure to hazardous substances and waste within a group of HUC12s. They can be used with additional indicators of pollutant exposure and

*HUC12s are subwatershed delineations in the [National Watershed Boundary Dataset](#). HUC12s are referenced by their 12-digit Hydrologic Unit Code.

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demographics (income, race, education, etc.) to identify HUC12s with populations that may face a greater pollution burden and associated health impacts. Such HUC12s may be considered priorities for follow-up restoration or protection efforts.

Processing Method

Counts of Superfund and HWM sites per HUC12 were derived from information in the EPA Facility Registry Service (FRS). The FRS is EPA's centralized database that identifies facilities, sites, or places that are subject to environmental regulations or otherwise are of environmental interest. Map layers depicting the location of Superfund sites and HWM sites were downloaded from the FRS in December 2020 and were overlaid with HUC12 boundaries to calculate site counts per HUC12.

Counts of RMP sites were derived from a table of RMP site information (including latitude-longitude coordinates) maintained by the EPA Office of Emergency Management (OEM) and acquired in January 2021. The latitude-longitude coordinates of RMP site were mapped and overlaid with HUC12 boundaries to calculate the RMP site count per HUC12.

An example map displaying the Superfund, HWM, and RMP map layers is provided in Figure 2.

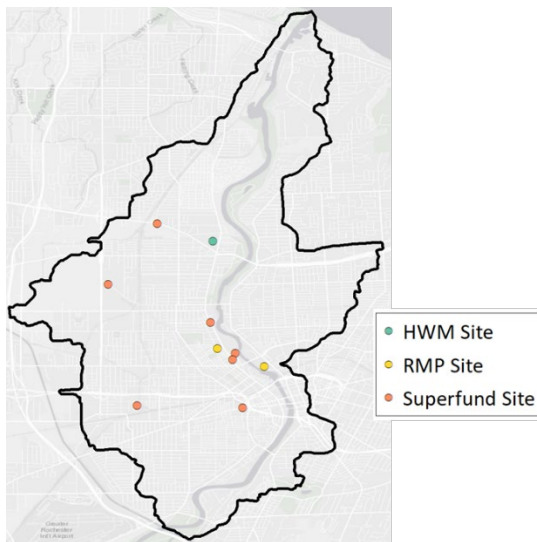


Figure 2. Map of Hazardous Waste Management (HWM), Risk Management Plan (RMP), and Superfund site locations in an example HUC12.

For all three indicators, duplicate points were filtered from each map layer by removing sites that had the exact same latitude-longitude coordinates as another site. The HWM site map layer was also filtered to only include sites with active status. Active/inactive status was not reported in the Superfund or RMP datasets.

Limitations

- These indicators reflect the potential for human exposure to hazardous substances. They are not intended to conclude that a hazardous substance release is occurring and harming a population.
- These indicators were selected due to availability of geographic data and should not be considered a complete inventory of hazardous substance exposure risks to communities.
- The datasets used to determine Superfund and RMP site counts do not report active versus inactive status for each site. Thus, superfund and RMP site counts include active and inactive sites. Inactive sites may include facilities where operations have terminated, and hazardous substances are no longer managed.

Links to Access Data and Additional Information

HUC12 indicator data can be accessed within Recovery Potential Screening (RPS) Tool files, available for download from the [EPA RPS](#) website.

Indicator data are also available for download or as web services on the [EPA Watershed Index Online \(WSIO\)](#) website.

The Superfund and HWM map layers used to calculate these indicators can be accessed from the [EPA Facility Registry Service Geospatial Data Download](#) website.

References

- ¹EPA. 2021. [Learn the Basics of Hazardous Waste](#). Accessed December 10, 2021.
- ²EPA. 2020. [What is Superfund?](#). Accessed October 27, 2021.
- ³EPA. 2021. [Risk Management Plan \(RMP\) Rule Overview](#). Accessed October 27, 2021.
- ⁴EPA. 2021. [Hazardous Waste Management Facilities and Units](#). Accessed October 27, 2021.
- ⁵Luo, J., et al. 2011. [Environmental Carcinogen Releases and Lung Cancer Mortality in Rural-Urban Areas of the United States](#). *The Journal of Rural Health*. 27(4): 342-349.
- ⁶Mohai, P., et al. 2015. [Which came first, people or pollution? Assessing the disparate siting and post-siting demographic change hypotheses of environmental injustice](#). *Environmental Research Letters*. 10(11): 115008.
- ⁷Elliott, M., et al. 2004. [Environmental justice: frequency and severity of US chemical industry accidents and the socioeconomic status of surrounding communities](#). *Journal of Epidemiology & Community Health*. 58(1): 24-30.