

Municipal Solid Waste Landfills

Subpart HH, Greenhouse Gas Reporting Program

OVERVIEW

Subpart HH of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR 98.340 – 98.348) applies to municipal solid waste (MSW) landfills that meet the Subpart HH source category definition. Some subparts have thresholds that determine applicability for reporting, and some do not. To decide whether your facility must report under this subpart, please refer to 40 CFR 98.341 and the GHGRP [Applicability Tool](#).

This Information Sheet is intended to help facilities reporting under Subpart HH understand how the source category is defined, what greenhouse gases (GHGs) must be reported, how GHG emissions must be calculated and shared with EPA, and where to find more information.



How is This Source Category Defined?

The landfill source category consists of municipal solid waste (MSW) landfills that accepted waste on or after January 1, 1980, and generate methane (CH₄) in amounts equivalent to 25,000 metric tons of carbon dioxide equivalent (CO₂e) or more per year. This definition is based on the amount of CH₄ generated (adjusted for soil oxidation, but not considering whether any gas is collected and destroyed) and not the amount of CH₄ actually emitted. The MSW landfill consists of the landfill, landfill gas (LFG) collection systems, and LFG destruction devices (including flares).

This source category does not include industrial waste, Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste, Toxic Substances Control Act (TSCA) hazardous waste, or construction and demolition landfills.



What GHGs Must Be Reported?

MSW landfill owners and operators must report:

- Annual modeled CH₄ generation and CH₄ emissions from the landfill.
- Annual CH₄ destruction resulting from LFG collection and combustion systems (for landfills that have these systems).
- Annual carbon dioxide (CO₂), CH₄, and nitrous oxide (N₂O) emissions from stationary fuel combustion devices using the calculation methods specified in Subpart C (Stationary Fuel Combustion Sources) found at 40 CFR 98.30 – 98.38.

If multiple Greenhouse Gas Reporting Program (GHGRP) source categories are co-located at a facility, the facility may need to report greenhouse gas (GHG) emissions under a different subpart. Please refer to the relevant information sheet for a summary of the rule requirements for any other source categories located at the facility.



How Must GHG Emissions Be Calculated?

All MSW landfills must calculate modeled annual CH₄ generation based on:

- Measured or estimated values of historic annual waste disposal quantities; and
- Appropriate values for model inputs (i.e., degradable organic carbon (DOC) for each waste stream reported, DOC fraction in the landfill of each waste stream, CH₄ generation rate constant). Default parameter values are specified for uncharacterized MSW and individual waste materials.

Landfills that do not collect and destroy LFG must adjust the modeled annual CH₄ generation to account for soil oxidation (CH₄ that is converted to CO₂ as it passes through the landfill cover before being emitted) using one of the default soil oxidation factors. The resulting value represents both CH₄ generation (adjusted for oxidation) and CH₄ emissions.

Facilities that collect and control LFG must calculate the annual quantity of CH₄ recovered and destroyed based on continuous monitoring of gas flow rate and continuous or weekly monitoring of CH₄ concentration, temperature, pressure, and moisture content of the collected gas prior to the destruction device. CH₄ destruction efficiency (DE) must be based on the manufacturer's specified efficiency or 99%, whichever is less.

Facilities that collect and control LFG must then calculate CH₄ emissions in two ways and report both results. Emissions must be calculated by:

- Subtracting the measured amount of CH₄ recovered from the modeled annual CH₄ generation (with adjustments for soil oxidation and DE of the destruction device); and
- Applying a gas collection efficiency to the measured amount of CH₄ recovered to account for CH₄ that is emitted through the landfill surface (adjusted for soil oxidation). Default collection efficiencies are specified that take into account collection system coverage and landfill cover materials.

A checklist for data that must be monitored is available here: [Subpart HH Monitoring Checklist](#).



What Information Must Be Reported?

In addition to the information required by the General Provisions in Subpart A, found at 40 CFR 98.3(c), the following must be reported:

- Information on the landfill's operating status: the first and last year the landfill accepted waste, anticipated closure date, capacity, and whether leachate recirculation is used.
- Waste disposal quantity for each year of landfilling and the method used to estimate it.
- Waste composition for each year of landfilling in percent by weight.
- Values of all parameters used in the CH₄ generation calculations, including DOC and decay rate constant (k).
- Fraction of CH₄ in LFG and how this fraction was determined (measured or default values).
- Surface area of the landfill containing waste and cover materials used.
- Annual modeled CH₄ generation.
- An indication of the applicability of 40 CFR Part 60 or Part 62 requirements to the landfill (40 CFR Part 60).
 - If the landfill is subject to 40 CFR Part 60 or Part 62 MSW landfill rule, an indication of whether the LFG collection system is required under 40 CFR Part 60 or Part 62.

- Annual CH₄ generation adjusted for oxidation (which equates to CH₄ emissions for landfills without gas collection), the oxidation fraction used in the calculation and whether passive vents and/or passive flares are present at the landfill.

Landfills with gas collection systems must report:

- Total volumetric flow of LFG collected for destruction, annual average CH₄ concentration, monthly average temperature, pressure, and moisture content, if required.
- Number of gas collection systems at the landfill facility.
- For each gas collection system at the facility report:
 - Unique name or ID number for the gas collection system;
 - Description of the gas collection system;
 - Annual hours the gas collection system was operating normally;
 - Number of measurement locations associated with the gas collection system; and
 - For each measurement location associated with the gas collection system, report:
 - A unique name or ID number for the measurement location;
 - Annual quantity of recovered CH₄ (metric tons);
 - An indication of whether destruction occurs at the landfill facility, off-site, or both; and
 - If destruction occurs at the landfill facility (in full or in part), the number of destruction devices associated with the measurement location and the following information:
 - Unique name or ID number for the destruction device;
 - Type of destruction device;
 - DE (decimal);
 - Annual operating hours where active gas flow was sent to the destruction device and the destruction device was operating at its intended temperature or other parameter indicative of effective operation;
 - The estimated fraction of the recovered CH₄ reported for the measurement location directed to the destruction device.
- The following information about the landfill:
 - The surface area (square meters (m²)) and estimated waste depth (meters (m));
 - The estimated gas collection system efficiency for the landfill; and
 - An indication of whether passive vents and/or passive flares are present at the landfill.
- Annual CH₄ generation and annual CH₄ generation adjusted for oxidation and the oxidation fraction used in the calculation.
- CH₄ emissions calculated using each of the two estimation methods described above and the oxidation fractions used with each method.
- Annual facility CH₄ emissions for the subpart. (Facilities with LFG collection systems must choose which of the CH₄ emissions from the two estimation methods best represents emissions from the landfill.)



What Records Must Be Maintained?

Reporters are required to retain records that pertain to their annual GHGRP as described at 40 CFR 98.3(g). Please see the [Subpart A Information Sheet](#) and 40 CFR 98.3(g) for general recordkeeping requirements. Specific recordkeeping requirements for Subpart HH are listed at 40 CFR 98.347.



When and How Must Reports Be Submitted?

Reporters must submit their annual GHGRP reports for the previous calendar year to the EPA by March 31st, unless the 31st falls on a Saturday, Sunday, or federal holiday, in which case reports are due on the next business day. Annual reports must be submitted electronically using the [electronic Greenhouse Gas Reporting Tool \(e-GGRT\)](#), the GHGRP's online reporting system.

Additional information on setting up user accounts, registering a facility, and submitting annual reports is available on the [GHGRP Help webpage](#).



When Can a Facility Stop Reporting?

A facility may discontinue reporting under several scenarios, which are summarized in Subpart A (found at 40 CFR 98.2(i)) and the [Subpart A Information Sheet](#).



For More Information

For additional information on Subpart HH, please visit the [Subpart HH webpage](#). For additional information on the GHGRP, please visit the [GHGRP website](#), which includes additional information sheets, [data](#) previously reported to the GHGRP, [training materials](#), and links to Frequently Asked Questions ([FAQs](#)). For questions that cannot be answered through the GHGRP website, please contact us at: GHGreporting@epa.gov.

This Information Sheet is provided solely for informational purposes. It does not replace the need to read and comply with the regulatory text contained in the rule. Rather, it is intended to help reporting facilities and suppliers understand key provisions of the GHGRP. It does not provide legal advice; have a legally binding effect; or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits with regard to any person or entity.