

# Industrial Waste Landfills



## Greenhouse Gas Reporting Program

*Under the Greenhouse Gas Reporting Program (GHGRP), owners or operators of facilities that contain industrial waste landfills (as defined below) and that emit 25,000 metric tons or more of greenhouse gases (GHGs) per year (expressed as carbon dioxide equivalents) from the industrial waste landfill, stationary combustion, miscellaneous use of carbonates, and other source categories (see information sheet on General Provisions) must report emissions from industrial waste landfills and all other source categories located at the facility for which methods are defined in the rule. Owners or operators are required to collect emission data, calculate greenhouse gas (GHG) emissions, and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.*

## How Is This Source Category Defined?

An industrial waste landfill is any landfill other than a municipal solid waste landfill, a RCRA Subtitle C hazardous waste landfill, or a TSCA hazardous waste landfill, in which industrial solid waste, such as RCRA Subtitle D wastes (non-hazardous industrial solid waste, defined in 40 CFR 257.2), commercial solid wastes, or conditionally exempt small quantity generator wastes, is placed. An industrial waste landfill includes all disposal areas at the facility.

This source category consists of industrial waste landfills that accepted waste on or after January 1, 1980, and that are located at a facility whose total landfill design capacity is greater than or equal to 300,000 metric tons. It includes the landfill, any gas collection systems at the landfill, and destruction devices for landfill gases (including flares).

An industrial waste landfill is **not** subject to the rule if it is a dedicated construction and demolition waste landfill, or a landfill that receives only inert waste materials (as defined in the subpart) such as coal combustion residue (e.g., fly ash), cement kiln dust, rocks and/or soil, glass, non-chemically bound sand (e.g., green foundry sand), clay, gypsum, pottery cull, bricks, mortar, cement, furnace slag, refractory material, or plastics.

## What GHGs Must Be Reported?

Industrial waste landfill owners and operators must report:

- Annual CH<sub>4</sub> generation and CH<sub>4</sub> emissions from the landfill.
- Annual CH<sub>4</sub> destruction (for landfills with gas collection and control systems).

In addition, each facility must report GHG emissions for any other source categories for which calculation methods are provided in other subparts of the rule, as applicable.

## How Must GHG Emissions Be Calculated?

Industrial waste landfills must calculate modeled annual CH<sub>4</sub> generation based on:

- Measured or estimated values of historic annual waste disposal quantities; and
- Appropriate values for model inputs (i.e., degradable organic carbon fraction in the waste, CH<sub>4</sub> generation rate constant). Default parameter values are specified for certain industries and for industrial waste generically.

Landfills that do not collect and destroy landfill gas must adjust the modeled annual CH<sub>4</sub> generation to account for soil oxidation (CH<sub>4</sub> that is converted to CO<sub>2</sub> as it passes through the landfill cover before being emitted) using a default soil oxidation factor. The resulting value must be reported and represents *both* CH<sub>4</sub> generation and CH<sub>4</sub> emissions.

Industrial Waste Landfill facilities that collect and control landfill gas will use the same calculations specified in subpart HH – Municipal Solid Waste Landfills for monitoring, calculation, and reporting requirements related to CH<sub>4</sub> recovery. These requirements are described below.

Facilities that collect and control landfill gas must calculate the annual quantity of CH<sub>4</sub> recovered and destroyed based on continuous monitoring of landfill gas flow rate, and either continuous or weekly monitoring of CH<sub>4</sub> concentration, temperature, pressure, and moisture content of the collected gas prior to the destruction device. CH<sub>4</sub> destruction efficiency should be based on the manufacturer's specified efficiency or 99 percent, whichever is less.

Facilities that collect and control landfill gas must calculate CH<sub>4</sub> emissions in two ways and report *both* results as described in subpart HH – Municipal Solid Waste Landfills. Emissions must be calculated by:

1. Subtracting the measured amount of CH<sub>4</sub> recovered from the modeled annual CH<sub>4</sub> generation (with adjustments for soil oxidation and destruction efficiency of the destruction device) using the equations provided; and
2. Applying a gas collection efficiency to the measured amount of CH<sub>4</sub> recovered to “back-calculate” CH<sub>4</sub> generation, then subtracting the measured amount of CH<sub>4</sub> recovered (with adjustments for soil oxidation and destruction efficiency of the destruction device) from the back-calculated CH<sub>4</sub> generation using the equations provided. A default collection efficiency of 75 percent is specified, but landfills should use a collection efficiency that takes into account collection system coverage, operation, and landfill cover materials.

## **When Does Reporting Begin?**

Facilities subject to subpart TT must begin monitoring GHG emissions on January 1, 2011 in accordance with the methods specified in subpart TT. For 2012 only, the GHG report must be submitted to EPA by September 28, 2012. This reporting deadline applies to all subparts being reported by the facility. If your subpart TT facility submitted a GHG annual report for reporting year 2010 under another subpart (e.g., subpart C for general stationary fuel combustion), then by April 2, 2012 you must notify EPA through e-GGRT that you are not required to submit the second annual report until September 28, 2012 (the notification deadline according to 4 CFR 98.3(b) is March 31, 2012, however, because this date falls on a Saturday in 2012, the notification is due on the next business day).

Starting in 2013 and each year thereafter, reports must be submitted to EPA by March 31 of each year, unless the 31st is a Saturday, Sunday, or federal holiday, in which case the reports are due on the next business day.

## **What Information Must Be Reported?**

In addition to the information required by the General Provisions at 40 CFR 98.3(c), each facility must report the following landfill information:

- General information about the landfill, including whether the landfill is “open” or “closed,” the year in which the landfill first started accepting waste for disposal, the last year the landfill accepted

waste or the projected year of landfill closure, the capacity of the landfill, and an indication of whether leachate recirculation is used at the landfill.

- Waste characterization information, such as the number of waste streams or waste stream types accepted at the landfill and a description of each waste stream.
- Waste stream-specific information, such as the decay rate (k) value used in the calculations, the method(s) for estimating historical waste disposal quantities, and the range of years for which each method applies. When historical disposal rates are estimated based on production or filled capacity, the production or filled capacity parameters needed to estimate the historical disposal rates must also be reported.
- Historic and current annual landfill operating information, such as the quantity of waste disposed of in the landfill for each waste stream type for each year, the degradable organic carbon content value for each waste stream or waste stream type for each year, an indication as to whether this was the default value, a measured value using a 60-day anaerobic biodegradation test, or a value based on total and volatile solids measurements, and if the DOC value was determined using a 60-day anaerobic biodegradation test, which test was used.
- The fraction of CH<sub>4</sub> in the landfill gas for the reporting year and an indication as to whether this was the default value or a value determined through measurement data.
- Description of the landfill cover, such as the type(s) of cover material used, and the landfill surface area at the start of the reporting year associated with each cover type.
- Modeled annual CH<sub>4</sub> generation rate for the reporting year.
- Annual CH<sub>4</sub> generation adjusted for oxidation. (Landfills with gas collection systems must report both annual CH<sub>4</sub> generation based on modeled CH<sub>4</sub> generation and annual methane generation back-calculated from CH<sub>4</sub> recovery.)
- Annual CH<sub>4</sub> emissions (landfills with gas collection systems must report both CH<sub>4</sub> emissions from modeled CH<sub>4</sub> generation adjusted for recovery and CH<sub>4</sub> emissions back-calculated from CH<sub>4</sub> recovery).
- Annual quantity of CH<sub>4</sub> recovered (for landfills with landfill gas collection systems).
- An indication of whether passive vents and/or passive flares are present at the landfill.
- Information about active landfill gas collection systems (if present), such as the total volumetric flow of landfill gas collected for destruction, the measured CH<sub>4</sub> concentration, monthly average measured temperature, pressure, and moisture content, a description of the gas collection system (manufacture, capacity, number of wells, etc.), the gas collection efficiency, annual operating hours of the gas collection system, and the surface area, waste depth and cover type for areas within the landfill serviced by the landfill gas collection system.
- Information about landfill gas destruction devices (for landfills with gas collection system), such as an indication of whether destruction occurs onsite or offsite, the destruction device efficiency, an indication of whether a back-up destruction device is available and the annual operating hours for primary destruction and back-up destruction devices.

EPA has temporarily deferred the requirement to report data elements in the above list that are used as inputs to emission equations (76 FR 53057, August 25, 2011). For the current status of reporting requirements, including the list of data elements that are considered to be inputs to emissions equations, consult the following link: [http://www.epa.gov/epaosopr/40cfr/40cfr98.html](#)

## For More Information

This document is provided solely for informational purposes. It does not provide legal advice, have legally binding effect, or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits in regard to any person. The series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the final rule.

Visit EPA's Web site (<http://www.epa.gov/ghg>) for more information, including all rulemakings related to the Greenhouse Gas Reporting Program, additional information sheets on specific industries, the schedule for training sessions, and other documents and tools. For questions that cannot be answered through the Web site, please contact us at: [GHGreporting@epa.gov](mailto:GHGreporting@epa.gov).