Landfills

Proposed Rule: Mandatory Reporting of Greenhouse Gases

United States Environmental Protection Agency

Under the proposed Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain municipal landfills (as defined below) or industrial landfills (as defined below) would report emissions from landfills and all other source categories located at the facility for which methods are defined in the rule. Owners or operators would collect emission data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.

How Is This Source Category Defined?

Under the proposal, this source category consists of:

- Municipal solid waste landfills that generate methane (CH_4) in amounts equivalent to 25,000 metric tons of carbon dioxide equivalent (CO_2e) or more per year. Note that this definition is based on the amount of CH_4 *generated* (regardless of whether any gas is collected and destroyed) instead of on the amount of CH_4 actually emitted.
- Industrial landfills at facilities that emit 25,000 metric tons of GHGs per year or more (expressed as CO_2e) from the landfill, combustion sources, miscellaneous use of carbonates, and other source categories (see information sheet on General Provisions) located at the facility. The types of facilities that contain industrial landfills that could be subject to this reporting rule include, but are not limited to, the following:
    - Pulp and paper mills
    - Food processing plants
    - Ethanol production plants

This source category does not include hazardous waste landfills or construction and demolition landfills.

What GHGs Would Be Reported?

For both municipal and industrial landfills, the proposal calls for facilities to report:

- Annual CH_4 generation and CH_4 emissions from the landfill.
- Annual CH_4 destruction (for landfills with gas collection and control systems).
- Annual CO_2, CH_4, and nitrous oxide (N_2O) emissions from stationary fuel combustion devices using the calculation methods specified in 40 CFR part 98, subpart C (General Stationary Combustion Sources). The information sheet on general stationary fuel combustion sources summarizes the proposal for calculating and reporting emissions from these units. For landfill gas flares, report:
    - CH_4 and N_2O emissions from combustion of landfill gas and other fuels (e.g., natural gas or other fuels used for pilot gas or to supplement the heating value of landfill gas).
    - CO_2 emissions only from combustion of fuels other than landfill gas (e.g., natural gas or other fuels used for pilot gas or to supplement the heating value of landfill gas). CO_2 emissions from the landfill gas destroyed in the flare would not be reported.

How Would GHG Emissions Be Calculated?

Under the proposal, all facilities would calculate modeled annual CH_4 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_4 generation rate constant). Default parameter values are specified for bulk municipal waste, individual waste constituents, and various industrial waste.

Facilities that do not collect and destroy landfill gas would adjust the modeled annual CH_4 generation to account for soil oxidation (CH_4 that is converted to CO_2 as it passes through the landfill cover before being emitted) using a default soil oxidation factor. The resulting value would be reported and represents *both* CH_4 generation and CH_4 emissions.

Facilities that collect and control landfill gas would calculate the annual quantity of CH_4 recovered and destroyed based on continuous monitoring of landfill gas flow rate, CH_4 concentration, temperature, and pressure of the collected gas prior to the destruction device. CH_4 destruction efficiency would be based on the manufacturer's specified efficiency or 99 percent, whichever is less.

Those facilities that collect and control landfill gas would then calculate CH_4 emissions in two ways and report *both* results. Emissions would be calculated by:

1. Subtracting the measured amount of CH_4 recovered from the modeled annual CH_4 generation (with adjustments for soil oxidation and destruction efficiency of the destruction device).
2. Applying a gas collection efficiency to the measured amount of CH_4 recovered to account for CH_4 that is emitted through the landfill surface (adjusted for soil oxidation). 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.

What Information Would Be Reported?

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

- Annual CH_4 generation.
- Annual CH_4 emissions (facilities with landfill gas collection and control systems would report emissions using both of two estimation methodologies described above and would also report annual CH_4 destruction by the destruction device).
- Annual waste disposal for each year of landfilling and how it was estimated.
- Waste composition data, if available, and how these data were estimated.
- Values of all parameters used in the calculations.
- For landfill gas collection systems, measured annual gas flow rate, measured CH_4 concentration, and monthly average measured temperature and pressure.
- For landfill gas destruction devices, the destruction efficiency.
- The gas collection efficiency used in emissions calculations and how it was determined.
- Descriptions of landfill characteristics that influence collection efficiency such as type of cover, acreage and quantity of waste covered by intermediate or final cap, and number of gas collection wells.

For More Information

This series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the proposed rule. However, these information sheets are not intended to be a substitution for the rule. Visit EPA's Web site (www.epa.gov/climatechange/emissions/ghgrulemaking.html) for more information, including the proposed preamble and rule and additional information sheets on specific industries, or go to <www.regulations.gov> to access the rulemaking docket (EPA-HQ OAR-2008-0508). For questions that cannot be answered through the Web site or docket, call 1-877-GHG-1188.