Industrial Wastewater Treatment Sources

Subpart II, Greenhouse Gas Reporting Program

OVERVIEW

Subpart II of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR 98.350 – 98.358) applies to any facility that treats industrial wastewater and meets the Subpart II 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 98.351 and the GHGRP Applicability Tool.

This Information Sheet is intended to help facilities reporting under Subpart II 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 industrial wastewater treatment source category consists of anaerobic processes used to treat industrial wastewater and wastewater treatment sludge at facilities that perform the following operations:

- Pulp and paper manufacturing (see Subpart AA, found at 40 CFR 98.270 – 98.278);
- Food processing (fruits, vegetables, meat, and poultry processing only) (see 40 CFR 98.358);
- Ethanol (C_2H_6O) production (see 40 CFR 98.358); and
- Petroleum refining (see Subpart Y, found at 40 CFR 98.250 – 98.258).

The category does *not* include anaerobic processes used to treat wastewater and wastewater treatment sludge at other industrial facilities. It also does not include emissions from:

- Municipal wastewater treatment plants.
- Separate treatment of sanitary wastewater at industrial facilities.
- Oil/water separators.
- Aerobic and anoxic treatment of industrial wastewater.

Anaerobic processes use microorganisms to degrade organic matter in wastewater, wastewater treatment sludge, or other material in the absence of oxygen (O_2), resulting in the generation of carbon dioxide (CO_2) and methane (CH_4). The anaerobic treatment processes included in this category are:

- Anaerobic reactors;
- Anaerobic lagoons;
- Anaerobic sludge digesters; and
- Biogas destruction devices.

What GHGs Must Be Reported?

Facilities that are subject to Subpart II must report:

- Annual mass of CH_4 *generated*, *emitted*, and *recovered* from the treatment of industrial wastewater at each anaerobic lagoon and anaerobic reactor.
- Annual mass of CH_4 *emitted* and *recovered* from each anaerobic sludge digester.
- Annual mass of CH_4 *emitted* and *destroyed* by each biogas collection and biogas destruction device.

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?

The mass of CH_4 generated, recovered, and emitted must be calculated using the following inputs:

- Measured wastewater flow into each anaerobic process.
- Measured concentration of chemical oxygen demand (COD) or biochemical oxygen demand (BOD_5) in wastewater flow into each anaerobic process.
- Measured flow of biogas recovered from each anaerobic process.
- Measured CH_4 concentration of the biogas recovered from each anaerobic process.
- Appropriate values for CH_4 producing potential, methane conversion factor (MCF), biogas collection efficiency, and biogas destruction device destruction efficiency (DE).
- Calculated value of CH_4 leakage at the anaerobic process.
- Operating time of the biogas recovery system and biogas destruction devices per year.

For anaerobic wastewater treatment processes, each week that the process is operating, facilities must collect 24-hour composite samples of the wastewater flowing into the process and analyze it for COD or BOD_5 concentration. Facilities must also measure the flow rate of wastewater for the same 24-hour period for which they collect samples. Using these measurements and appropriate values for CH_4 producing potential and MCF, facilities must then calculate the CH_4 generated by each anaerobic wastewater treatment process during the week. Weekly values must be summed to calculate the annual mass of CH_4 generated.

For all anaerobic treatment processes (reactors, lagoons, and sludge digesters) from which some biogas is recovered, facilities must calculate the annual quantity of CH_4 recovered based on continuous monitoring of the biogas flow rate; continuous or weekly monitoring of CH_4 concentration, temperature, pressure, and moisture content; and appropriate biogas collection efficiencies as specified in the rule. They must also calculate the annual quantity of CH_4 emitted, based on calculated values for biogas leakage and values for biogas destruction device DE. CH_4 DE must be based on either the manufacturer's specified efficiency or 99%, whichever is less.

A checklist for data that must be monitored is available here: Subpart II 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:

- Identification of the anaerobic processes used in the industrial wastewater treatment system, a unique identifier for each process, an indication of the average depth in meters of each anaerobic lagoon, and an indication as to whether biogas generated by each process is recovered. Each anaerobic process must be identified as:
    - Anaerobic reactor;
    - Anaerobic deep lagoon (depth more than 2 meters (m));
    - Anaerobic shallow lagoon (depth less than 2 m); or
    - Anaerobic sludge digester.
- A description or diagram of the industrial wastewater treatment system, identifying the processes used; indicating how the processes are related to each other and providing the unique identifier for each process.
- For each anaerobic wastewater treatment process (reactor or lagoon), facilities must report:
    - Weekly average COD or BOD_5 concentration of wastewater entering each anaerobic wastewater treatment process, for each week the anaerobic process was operated.
    - Volume of wastewater entering each anaerobic wastewater treatment process for each week the anaerobic process was operated.
    - Maximum CH_4 production potential (B_0) used to calculate CH_4 generation.
    - MCF used to calculate CH_4 generation.
    - Annual mass of CH_4 generated by each anaerobic wastewater treatment process.
    - If the facility performs an C_2H_6O production processing operation, an indication if the facility uses a wet or dry milling process.
- For each anaerobic reactor, anaerobic lagoon, and anaerobic sludge digester from which some biogas is recovered, facilities must report:
    - Annual quantity of CH_4 recovered from the anaerobic treatment processes.
    - Total weekly volumetric biogas flow for each week that biogas is collected for destruction.
    - Weekly average CH_4 concentration for each week that biogas is collected for destruction.
    - Weekly average temperature for each week at which flow is measured for biogas collected for destruction, or statement that temperature is incorporated into monitoring equipment internal calculations.
    - Whether flow was measured on a wet or dry basis, whether CH_4 concentration was measured on a wet or dry basis, and if required, weekly average moisture content for each week at which flow is measured for biogas collected for destruction, or statement that moisture content is incorporated into monitoring equipment internal calculations.
    - Weekly average pressure for each week that flow is measured for biogas collected for destruction, or statement that pressure is incorporated into monitoring equipment internal calculations.
    - CH_4 collection efficiency used to calculate biogas recovery.
    - Whether destruction occurs at the facility or off-site. If destruction occurs at the facility, facilities must also report whether a back-up destruction device is present, the annual operating hours for the primary destruction device, the annual operating hours for the back-up destruction device (if present), the DE for the primary destruction device, and the DE for the backup destruction device (if present).
    - Annual quantity of CH_4 emitted from the process.

- The total mass of CH_4 emitted from all anaerobic processes, including anaerobic processes from which biogas is not recovered and anaerobic processes from which some biogas is recovered.

What Records Must Be Maintained?

Reporters are required to retain records that pertain to their annual GHGRP report for at least three years after the date the report is submitted. Please see the Subpart A Information Sheet and 40 CFR 98.3(g) for general recordkeeping requirements. Specific recordkeeping requirements for Subpart II are listed at 40 CFR 98.357.

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 II, please visit the Subpart II 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.