Lime Manufacturing

Subpart S, Greenhouse Gas Reporting Program

Under the Greenhouse Gas Reporting Program (GHGRP), owners or operators of facilities that manufacture lime (as defined below) must report emissions from lime manufacturing processes 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 GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting per the requirements of 40 CFR Part 98 Subpart S – Lime Manufacturing.

How Is This Source Category Defined?

The lime manufacturing source category consists of each kiln that produces a lime product from limestone or dolomite by means of calcination.

What Greenhouse Gases Must Be Reported?

Lime manufacturing facilities must report the following emissions:

- Carbon dioxide (CO_2) process emissions from all lime kilns combined.
- CO_2 combustion emissions from lime kilns.
- Nitrous oxide (N_2O) and methane (CH_4) emissions from fuel combustion at each kiln. Report these emissions under 40 CFR part 98, subpart C (General Stationary Fuel Combustion Sources) using the methodologies in subpart C.
- CO_2, N_2O, and CH_4 emissions from any other stationary combustion units. Report these emissions under 40 CFR part 98, subpart C (General Stationary Fuel Combustion Sources). The information sheet on General Stationary Fuel Combustion Sources summarizes the rule requirements for calculating and reporting emissions from these units.

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

How Must Greenhouse Gas Emissions Be Calculated?

Calculate CO_2 emissions from kilns by using one of the following methods, as appropriate:

- If all lime kilns meet the conditions given in §98.33(b)(4)(ii) or (iii) emissions must be determined using a continuous emission monitoring systems (CEMS). The Tier 4 calculation methodology of 40 CFR part 98, subpart C must be used to report combined CO_2 emissions from calcination and fuel combustion.
- For kilns that are not required to monitor emissions using a CEMS, the reporter can elect to either:
  - Install and operate a CEMS to measure combined process and combustion CO_2 emissions according to the requirements of 40 CFR part 98, subpart C.
  - Calculate CO_2 process emissions from lime production using the following measurements:
    - A facility-wide emission factor calculated monthly for each lime type from monthly measurements of the calcium oxide and magnesium oxide content of the lime and stoichiometric ratios of CO_2 to each oxide in the lime.
    - An emission factor calculated monthly for each lime byproduct/waste sold (such as lime kiln dust).

- Annual emissions from unsold lime byproducts/wastes (such as lime kiln dust and scrubber sludge).
- Mass of each lime type produced on a monthly basis.
- Mass of byproduct/waste sold on a monthly basis.

A checklist for data that must be monitored is available at: https://www.epa.gov/ghgreporting/subpart-s-checklist

What Information Must Be Reported?

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

If a CEMS is used to measure CO_2 emissions, then under this subpart the relevant information required under 40 CFR subpart C (General Stationary Fuel Combustion Sources) for the Tier 4 calculation methodology and the following information must be reported:

- Method used to determine the quantity of lime sold.
- Method used to determine the quantity of lime byproduct/waste sold.
- Beginning and end-of-year inventories for each lime product.
- Beginning and end-of-year inventories for lime byproducts/wastes.
- Annual amount of lime byproduct/waste sold, by type (tons).
- Annual amount of lime product sold, by type (tons).
- Annual amount of lime byproduct/waste not sold, by type (tons).
- Annual amount of lime product not sold, by type (tons).

If a CEMS is not used to measure emissions, then the following information must be reported:

- Annual CO_2 process emissions from all kilns combined (metric tons).
- Standard method used (American Society for Testing and Materials or National Lime Association testing method) to determine chemical compositions of each lime type and lime byproduct/waste type.
- Method used to determine the quantity of lime sold.
- Method used to determine the quantity of lime byproduct/waste sold.
- Beginning and end-of-year inventories for each lime product.
- Beginning and end-of-year inventories for lime byproducts/wastes.
- Annual lime production capacity (tons) per facility.
- Number of times in the reporting year that missing data procedures were followed to measure lime production (months) or the chemical composition of lime products sold (months).
- Indicate whether CO_2 was used on-site (i.e. for use in a purification process). If CO_2 was used on-site, provide the annual amount of CO_2 captured for use in the on-site process and the method used to determine the amount of CO_2 captured.
- Annual quantity (tons) of lime product sold, by type.
- Annual average emission factors for each lime product type produced.
- Annual average emission factors for each calcined byproduct/waste by lime type that is sold.
- Annual average results of chemical composition analysis of each type of lime product produced and calcined byproduct/waste sold.

Facilities must enter required data into the electronic Greenhouse Gas Reporting Tool (eGGRT) to be reported in the annual report, and must also enter into e-GGRT's *Inputs Verifier Tool* (IVT) the inputs to emission equations for which reporting is not required. IVT uses these entered data to calculate the equation results.

When and How Must Reports Be Submitted?

Annual reports must be submitted 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. Annual reports must be submitted electronically using the e-GGRT, the GHGRP's online reporting system. Additional information on setting up user accounts, registering a facility and submitting annual reports is available at https://ccdsupport.com/confluence/.

When Can a Facility Stop Reporting?

There are several scenarios under which a facility may discontinue reporting. These scenarios are summarized in the Subpart A Information Sheet as well as in an FAQ.

For More Information

For additional information on Subpart S, visit the Subpart S Resources webpage. For additional information on the Greenhouse Gas Reporting Program, visit the Greenhouse Gas Reporting Program Website, which includes information sheets on other rule subparts, data previously reported to the Greenhouse Gas Reporting Program, training materials, and links to frequently asked questions.

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 Greenhouse Gas Reporting Program.