

# Cement Production



## Final Rule: Mandatory Reporting of Greenhouse Gases

*Under the Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain cement production processes (as defined below) must report emissions from cement production 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.*

### How Is This Source Category Defined?

The cement production source category consists of each kiln and each inline kiln/raw mill at any Portland cement manufacturing facility, including alkali bypasses and kilns and inline kilns/raw mills that burn hazardous waste.

### What GHGs Must Be Reported?

Cement production facilities must report the following emissions:

- Carbon dioxide (CO<sub>2</sub>) process emissions from calcination for each kiln.
- CO<sub>2</sub> combustion emissions from each kiln.
- Nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) combustion emissions from each kiln. 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.
- CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> emissions from fuel combustion at each stationary combustion unit other than kilns. Report these emissions under 40 CFR part 98, subpart C (General Stationary Fuel Combustion Sources).

### How Must GHG Emissions Be Calculated?

For CO<sub>2</sub> emissions from kilns, the rule requires facilities to select one of two methods, as appropriate:

- Kilns with certain types of continuous emission monitoring systems (CEMS) in place must report combined CO<sub>2</sub> emissions from calcination and fuel combustion. Report under this subpart using the CEMS in accordance with the Tier 4 calculation methodology of 40 CFR part 98, subpart C.
- For other kilns, owners or operators can elect to either:
  - Install and operate a CEMS to measure combined calcination and fuel combustion CO<sub>2</sub> emissions according to the Tier 4 methodology specified in subpart C.
  - Calculate process CO<sub>2</sub> emissions as the sum of clinker emissions and raw material emissions:
    - Clinker emissions are calculated monthly from each kiln using:
      - Monthly clinker production (measurement required).
      - A monthly kiln-specific clinker emission factor calculated from the monthly carbonate and noncarbonate content of the clinker (measurement required).
      - Quarterly cement kiln dust (CKD) discarded (measurement required).
      - A quarterly kiln-specific CKD emission factor for CKD not recycled to the kiln (measurement or default values).
    - Raw material emissions are calculated annually from:
      - The annual consumption of raw materials.
      - The organic carbon content in the raw material (measured annually for each type of raw material, or a default value of 0.2 percent may be used).

- Number of raw materials.
- Conversion factors for CO<sub>2</sub> and metric tons.

A checklist for data that must be monitored is available at:

[www.epa.gov/ghgreporting/documents/pdf/checklists/cementproduction.pdf](http://www.epa.gov/ghgreporting/documents/pdf/checklists/cementproduction.pdf).

## When Must Reports be Submitted?

The submission date for the annual GHG report can vary in the first 3 years of the program.

- Reporting Year 2010. The report was required to be submitted by September 30, 2011.
- Reporting Year 2011. The due date depends on which source categories are included in the report. If the report includes one or more of the source categories listed below, then the report must be submitted by September 28, 2012. This reporting deadline applies to all subparts being reported by the facility. In addition, if the facility contains one or more of these source categories and the 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).
  - Electronics Manufacturing (subpart I)
  - Fluorinated Gas Production (subpart L)
  - Magnesium Production (subpart T)
  - Petroleum and Natural Gas Systems (subpart W)
  - Use of Electric Transmission and Distribution Equipment (subpart DD)
  - Underground Coal Mines (subpart FF)
  - Industrial Wastewater Treatment (subpart II)
  - Geologic Sequestration of Carbon Dioxide (subpart RR)
  - Manufacture of Electric Transmission and Distribution (subpart SS)
  - Industrial Waste Landfills (subpart TT)
  - Injection of Carbon Dioxide (subpart UU)
  - Imports and Exports of Equipment Pre-charged with Fluorinated GHGs or Containing Fluorinated GHGs in Closed-cell Foams (subpart QQ)

If the report contains none of the source categories listed above, then the report must be submitted by April 2, 2012 (the deadline is March 31, 2012, however, because this date falls on a Saturday, the annual report is due on the next business day).

- Reporting Year 2012. Starting in 2013 and each year thereafter, the report 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.

## What Information Must Be Reported?

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

If a CEMS is used to measure CO<sub>2</sub> emissions, report under this subpart the relevant information required for CEMS by subpart C (General Stationary Fuel Combustion Sources) and the information listed below:

- Monthly clinker production from each kiln.
- Monthly cement production from each kiln.
- Number of kilns and number of operating kilns.

If a CEMS is not used to measure CO<sub>2</sub> emissions, report the following information for each kiln:

- Monthly clinker production.
- Monthly cement production.
- Number of kilns and number of operating kilns.
- Quarterly quantity of CKD not recycled to the kiln.
- Monthly fraction of total calcium oxide(CaO), total magnesium oxide (MgO), non-calcined CaO, and non-calcined MgO in clinker (as wt-fractions).
- Method used to determine non-calcined CaO and non-calcined MgO in clinker.
- Quarterly fraction of total CaO, total MgO, non-calcined CaO, and non-calcined MgO in CKD not recycled to the kiln for each kiln (as wt-fractions).
- Method used to determine non-calcined CaO and non-calcined MgO in CKD.
- Monthly kiln-specific clinker CO<sub>2</sub> emission factors (metric tons CO<sub>2</sub>/metric ton clinker produced).
- Quarterly kiln-specific CKD CO<sub>2</sub> emission factors (metric tons CO<sub>2</sub>/metric ton CKD produced).
- Annual organic carbon content of each raw material (wt-fraction, dry basis).
- Annual consumption of each raw material (dry basis).
- Number of times missing data procedures were used to determine the information below:
  - Clinker production (number of months).
  - Carbonate contents of clinker (number of months).
  - Non-calcined content of clinker (number of months).
  - CKD not recycled to kiln (number of quarters).
  - Non-calcined content of CKD (number of quarters).
  - Organic carbon contents of raw materials (number of times).
  - Raw material consumption (number of months).

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/ghgreporting/reporters/cbi/index.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 ([www.epa.gov/ghgreporting/reporters/index.html](http://www.epa.gov/ghgreporting/reporters/index.html)) for more information, including the final preamble and rule, 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).