

# Iron and Steel Production



## Final Rule: Mandatory Reporting of Greenhouse Gases

*Under the Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain iron and steel production processes (as defined below) and that emit 25,000 metric tons of GHGs per year or more (expressed as carbon dioxide equivalents) from stationary combustion, iron and steel production processes, miscellaneous use of carbonates, and other source categories (see information sheet on General Provisions) must report emissions from all source categories located at the facility for which emission calculation 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 iron and steel production source category consists of facilities with any of the following processes:

- Taconite iron ore processing.
- Integrated iron and steel manufacturing (production of steel from iron ore or iron ore pellets).
- Coke making not co-located with an integrated iron and steel manufacturing process.
- Electric arc furnace (EAF) steelmaking not co-located with an integrated iron and steel manufacturing process.

## What GHGs Must Be Reported?

Facilities must report the following emissions annually:

- Carbon dioxide (CO<sub>2</sub>) process emissions from each taconite indurating furnace, basic oxygen furnace, nonrecovery coke oven battery combustion stack, coke pushing process; sinter process, EAF, argon-oxygen decarburization vessel, and direct reduction furnace.
- CO<sub>2</sub>, methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) emissions from each stationary fuel combustion unit. Stationary combustion units include, but are not limited to, byproduct recovery coke oven battery combustion stacks, blast furnace stoves, boilers, process heaters, reheat furnaces, annealing furnaces, flame suppression, ladle reheaters, and any other miscellaneous combustion sources (except flares). Report these emissions under subpart C by following the requirements in 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>, CH<sub>4</sub>, and N<sub>2</sub>O emissions from flares according to the requirements in 40 CFR part 98, subpart Y (Petroleum Refineries) using the default CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emission factors for coke oven gas and blast furnace gas.

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.

## 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)
  - 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.

## How Must GHG Emissions Be Calculated?

For CO<sub>2</sub> process emissions at each taconite indurating furnace, basic oxygen furnace, nonrecovery coke oven battery, sinter process, EAF, argon-oxygen decarburization vessel, and direct reduction furnace, calculate emissions using one of the following methods, as appropriate:

- Operate and maintain a continuous emission monitoring system (CEMS) to measure the combined process and combustion CO<sub>2</sub> emissions according to the requirements specified in 40 CFR part 98, subpart C.
- Use one of the following two calculation methods:
  - **Carbon balance method.** Calculate the mass emissions rate of CO<sub>2</sub> in each calendar month for each process based on the annual mass of inputs and outputs and the respective weight fraction of carbon in each process input or output that contains carbon. Use separate procedures and equations for taconite indurating furnaces, basic oxygen process

furnaces, nonrecovery coke oven batteries, sinter processes, EAFs, argon-oxygen decarburization vessels, and direct reduction furnaces. Exclude inputs or outputs that can be documented to contribute less than 1 percent of the total mass of carbon into or out of the process.

- **Site-specific emission factor.** Determine an emission factor from a performance test that measures CO<sub>2</sub> emissions from all exhaust stacks for the process, and also measure either the feed rate of materials into the process or the production rate during the test in metric tons per hour.
- However, if process CO<sub>2</sub> emissions from a taconite indurating furnace, basic oxygen furnace, nonrecovery coke oven battery, sinter process, EAF, argon-oxygen decarburization vessel, or direct reduction furnace are emitted through the same stack as any combustion unit or process equipment that reports CO<sub>2</sub> emissions using a CEMS that follows the Tier 4 methodology in subpart C, then the CEMS must be used to measure and report combined CO<sub>2</sub> emissions from that stack. In such cases, the reporter cannot use the other process CO<sub>2</sub> calculation approaches summarized above.

For coke oven pushing, use the CO<sub>2</sub> emission factor provided in the rule and the amount of coal charged to the coke oven.

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

<http://www.epa.gov/climatechange/emissions/downloads/checklists/ironandsteelproduction.pdf>.

## What Information Must Be Reported?

In addition to the information required by the General Provisions at 40 CFR 98.3(c), report the following information for each coke pushing operation, taconite indurating furnace, basic oxygen furnace, nonrecovery coke oven battery, sinter process, EAF, argon-oxygen decarburization vessel, and direct reduction furnace, as applicable:

- Unit identification number.
- Annual CO<sub>2</sub> emissions (metric tons).
- Annual production quantity (metric tons) for taconite pellets, coke, sinter, iron, and raw steel.
- If you use the carbon mass balance method to determine CO<sub>2</sub> emissions, also report the following information for each process:
  - The carbon content of each process input and output used to determine CO<sub>2</sub> emissions.
  - Whether the carbon content was determined from information from the supplier or by laboratory analysis, and if by laboratory analysis, the test method used.
  - The annual volume of gaseous fuel (standard cubic feet), the annual volume of liquid fuel (gallons), and the annual mass (metric tons) of all other process inputs and outputs used to determine CO<sub>2</sub> emissions.
  - The molecular weight of gaseous fuels.
  - How missing data values, if any, were determined for monthly mass of carbon containing inputs and outputs, and the number of months the missing data procedures were used.
- If you use the site-specific emission factor method to determine CO<sub>2</sub> emissions, also report the following information for each process:
  - The measured average hourly CO<sub>2</sub> emission rate during the test (metric tons per hour).
  - The average hourly feed or production rate (as applicable) during the test (metric tons per hour).
  - The site-specific emission factor (metric tons CO<sub>2</sub> per metric ton of feed or production, as applicable).

- The annual feed or production rate used to estimate annual CO<sub>2</sub> emissions (metric tons).

If a CEMS is used to measure CO<sub>2</sub> emissions, report under this subpart the relevant information required by 40 CFR subpart C (General Stationary Fuel Combustion Sources) for the Tier 4 calculation methodology and the following information:

- Unit identification number.
- Annual CO<sub>2</sub> emissions (metric tons).
- Annual production quantity (metric tons) for taconite pellets, coke, sinter, iron, and raw steel.

## **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/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.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).