

Hydrogen Production



Final Rule: Mandatory Reporting of Greenhouse Gases

Under the Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain hydrogen production processes (as defined below) and that emit 25,000 metric tons or more of GHGs per year (expressed as carbon dioxide equivalents) from hydrogen production processes, stationary combustion, 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 hydrogen production source category consists of process units that produce hydrogen by reforming, gasification, oxidation, reaction, or other transformation of feedstock, and that sell the hydrogen as a product. Hydrogen production units that are located at a petroleum refinery are included in this source category if they are not owned by or under the direct control of the refinery owner. Hydrogen production units that are owned by a petroleum refinery must report under subpart Y (Petroleum Refineries).

What GHGs Must Be Reported?

Hydrogen production facilities must report the following emissions:

- Carbon dioxide (CO₂) process emissions from each hydrogen production process unit.
- CO₂, methane (CH₄), and nitrous oxide (N₂O) combustion emissions from each hydrogen production process unit. Calculate and report these combustion emissions under 40 CFR 98, subpart C (General Stationary Fuel Combustion Sources) by following the requirements of subpart C.
- CO₂, CH₄, and N₂O emissions from each stationary combustion unit other than hydrogen production process units. Calculate and report these emissions under 40 CFR 98, subpart C by following the requirements of subpart C.
- CO₂ collected and either used on site or transferred off site by following the requirements of 40 CFR part 98, subpart PP (Suppliers of Carbon Dioxide).

In addition, each facility must report GHG emissions for other source categories for which calculation methods are provided in the rule. Please refer to the relevant information sheet for a summary of the rule requirements for calculating and reporting emissions from other source categories at the facility.

How Must GHG Emissions Be Calculated?

Report CO₂ emissions from hydrogen production using one of the following two methods:

- Install and operate a continuous emission monitoring system (CEMS) to measure combined process and combustion CO₂ emissions according to the Tier 4 calculation methodology specified in 40 CFR part 98, subpart C.
- Calculate process CO₂ emissions by measuring the following:
 - Feedstocks and fuel consumed each month.

- Average carbon content of the fuel and feedstock for each month.
- Molecular weight of the fuel and feedstock.

However, if process CO₂ emissions from hydrogen production are vented through the same stack as a combustion unit or process equipment that uses a CEMS to follow Tier 4 methodology to report CO₂ emissions, then the CEMS must be used to measure and report combined CO₂ emissions from that stack instead of the calculation procedure described in approach 2 above.

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

www.epa.gov/ghgreporting/documents/pdf/checklists/hydrogenproduction.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), each hydrogen production facility must report the following information:

- Quarterly quantity of CO₂ collected and transferred off site in either gas, liquid, or solid forms (kg), following the requirements of subpart PP of this part and reported at the facility level.
- Annual quantity of carbon other than CO₂ collected and transferred off site in either gas, liquid, or solid forms (kg carbon), reported at the facility level.

If a CEMS is used to measure CO₂ emissions, also report under this subpart the relevant information required under 40 CFR part 98, subpart C and the following information listed below:

- Unit identification number and annual CO₂ process emissions (metric tons) for each process unit.
- Annual quantity of hydrogen produced (metric tons) for each process unit and all units combined.
- Annual quantity of ammonia produced (metric tons), if applicable, for each process unit and for all units combined.

If a CEMS is not used to measure CO₂ emissions, also report the following information for each hydrogen production process unit:

- Unit identification number and annual CO₂ process emissions (metric tons).
- Monthly consumption of each fuel and feedstock used for hydrogen production and its type (standard square feet of gaseous fuels and feedstocks; gallons of liquid fuels and feedstocks; kilograms of solid fuels and feedstocks).
- Annual quantity of hydrogen produced (metric tons).
- Annual quantity of ammonia produced, if applicable (metric tons).
- Monthly analyses of carbon content for each fuel and feedstock used in hydrogen production.
- Monthly analyses of the molecular weight of gaseous fuels and feedstocks (kg/kg-mole) used.

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) 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.