

Petrochemical Production



Proposed Rule: Mandatory Reporting of Greenhouse Gases

Under the proposed Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that produce petrochemicals (as defined below) would report emissions from petrochemical processes and all other source categories located at the facility for which methods are defined in the rule. Owners or operators would collect feedstock and product data or emission data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.

Facilities that produce petrochemicals should review the requirements of 40 CFR part 98, subpart MM (Suppliers of Petroleum Products) to determine if they would also report emissions under 40 CFR part 98, subpart MM.

How Is This Source Category Defined?

Under the proposal, petrochemical production consists of processes that produce acrylonitrile, carbon black, ethylene, ethylene dichloride, ethylene oxide, or methanol as an intended product, except when any of these six petrochemicals is not the primary product of an integrated process. An example of an integrated process is the production of both hydrogen and methanol from synthesis gas by steam reforming of methane. If methanol is the primary product, then the process would be classified as petrochemical production.

What GHGs Would Be Reported?

The proposal calls for petrochemical production facilities to report the following gases:

- Carbon dioxide (CO₂) emissions from each petrochemical process unit.
- CO₂ captured from process off-gas, by following the procedures in 40 CFR part 98, subpart PP (Suppliers of Carbon Dioxide).
- CO₂, methane (CH₄), and nitrous oxide (N₂O) emissions from each stationary combustion unit by following the procedures in 40 CFR part 98, subpart C (General Stationary Fuel Combustion Sources). Units that burn off-gas from a petrochemical process would report CO₂, CH₄, and N₂O emissions according to subpart C for the combustion of supplemental fuel; CH₄ and N₂O emissions from off-gas combustion would use the emission factors for refinery gas in 40 CFR part 98, subpart C. The information sheet on general stationary fuel combustion sources summarizes the proposal for calculating and reporting emissions from stationary combustion units.
- CH₄ emissions for each onsite wastewater treatment system using the procedures in subpart II (Wastewater Treatment).

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

How Would GHG Emissions Be Calculated?

Under the proposal, owners or operators would estimate the GHG emissions from each petrochemical process unit by using either a continuous emission monitoring system (CEMS) or a mass balance approach:

- **CEMS.** Processes units with certain types of CEMS in place would report using the CEMS to calculate total CO₂ emissions and by following the methodology of 40 CFR part 98, subpart C (except for flare stacks). CO₂, CH₄, and N₂O emissions would be estimated for each flare stack using the methodology specified in 40 CFR 98.253 of subpart Y (Petroleum Refineries).
- **Mass Balance.** Process units without applicable CEMS would use a mass balance approach for each petrochemical process unit to estimate process emissions of CO₂ for each calendar week. To complete the mass balance, measure:
 - Volume of each gaseous and liquid feedstock and product continuously with a flow meter.
 - Mass rate of each solid feedstock and product for each calendar week.
 - Carbon content of each feedstock and product based on weekly samples.

Owners or operators of integrated processes that use the mass balance approach would include terms in the mass balance equations for any additional carbon-containing products.

What Information Would Be Reported?

In addition to the information required by the General Provisions at 40 CFR 98.3(c), the proposal calls for each annual report to include the following information:

- If a CEMS is used to determine emissions from process vents, the verification data specified for the Tier 4 calculation methodology in 40 CFR 98.36(d)(iv) of subpart C would be reported.
- For processes that use the mass balance methodology, the following information would be reported for each petrochemical process unit and each type of petrochemical product:
 - Identification of the petrochemical process.
 - Annual CO₂ emissions calculated.
 - Methods used to determine feedstock and product flows and carbon contents.
 - Number of actual and substitute data points for each measured parameter.
 - Annual quantity of each feedstock consumed.
 - Annual quantity of each product and byproduct produced, including all products from integrated processes that are part of the petrochemical production source category.
 - Each carbon content measurement for each feedstock, product, and byproduct.
 - All calculations, measurements, equipment calibrations, certifications, and other information used to assess the uncertainty in emission estimates and the underlying volumetric flow rates, mass flow rates, and carbon contents of feedstocks and products.
 - Identification of any combustion units that burned process off-gas.

For More Information

This series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the proposed rule. However, these information sheets are not intended to be a substitution for the rule. Visit EPA's Web site (www.epa.gov/climatechange/emissions/ghgrulemaking.html) for more information, including the proposed preamble and rule and additional information sheets on specific industries, or go to www.regulations.gov to access the rulemaking docket (EPA-HQ OAR-2008-0508). For questions that cannot be answered through the Web site or docket, call 1-877-GHG-1188.