

HCFC-22 Production and HFC-23 Destruction



Proposed Rule: Mandatory Reporting of Greenhouse Gases

Under the proposed Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain hydrochlorofluorocarbon-22 (HCFC-22) production or hydrofluorocarbon-23 (HFC-23) destruction processes (as defined below) would report emissions from HCFC-22 production, HFC-23 destruction processes, and all other source categories located at the facility for which methods are defined in the rule. Owners or operators would 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?

Under the proposal, this source category consists of:

- Processes that produce HCFC-22 (chlorodifluoromethane or CHClF_2) using chloroform and hydrogen fluoride.
- HFC-23 destruction processes located at HCFC-22 production facilities.
- HFC-23 destruction processes that destroy more than 2.14 metric tons of HFC-23 per year and that are not located at HCFC-22 production facilities.

What GHGs Would Be Reported?

This proposal calls for facilities that produce HCFC-22 or that destroy HFC-23 to report the following emissions:

- HFC-23 emissions from all HCFC-22 production processes at the facility.
- HFC-23 emissions from each destruction process.

In addition, each facility would report GHG emissions for other source categories for which calculation methods are provided in the rule. For example, facilities would report carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) emissions from each stationary combustion unit on site by following the requirements of 40 CFR 98, subpart C (General Stationary Fuel Combustion Sources). Please refer to the relevant information sheet for a summary of the proposal for calculating and reporting emissions from any other source categories at the facility.

How Would GHG Emissions Be Calculated?

Under the proposal, owners or operators would calculate HFC-23 emissions as follows:

- For HCFC-22 production processes that do not use a thermal oxidizer or have a thermal oxidizer that is not connected to the production equipment, calculate annual HFC-23 emissions at the facility level using a mass balance equation and the following information:
 - Annual HFC-23 generated (using one of two alternative mass balance methods specified in the rule), the annual HFC-23 packaged for sale, the annual HFC-23 sent off site for destruction, and the annual HFC-23 destroyed on site (calculated by multiplying the mass of HFC-23 fed to the destruction device by the destruction efficiency).
- For HCFC-22 production processes with a thermal oxidizer that is connected to the production equipment, calculate annual HFC-23 emissions at the facility level using a mass balance equation and the following information:
 - Annual HFC-23 emissions from equipment leaks (calculated using default emission factors and measured number of leaks in valves, pump seals, compressor seals, pressure relief valves, connectors, and open-ended lines).

- Annual HFC-23 emissions from process vents (calculated for each vent using the HFC-23 emission rate from an annual emission test and the ratio of the actual production rate and the production rate during the performance test).
- Annual HFC-23 from the thermal oxidizer (calculated by subtracting the amount of HFC-23 destroyed by the destruction device from the measured mass of HFC-23 fed to the destruction device).
- For HFC-23 destruction processes, calculate HFC-23 emissions based on the mass of HFC-23 fed to the destruction device and the destruction efficiency.

For the destruction efficiency, the owner or operator would initially use the destruction efficiency determined during a previous performance test or, if no previous performance test has been completed, the destruction efficiency provided by the manufacturer of the destruction device. To confirm the destruction efficiency, the owner or operator would measure the mass flow and fluorinated GHG concentration at the outlet to the destruction device annually.

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 owners or operators to report the following information on an annual basis at the facility level:

- For each HCFC-22 production process, owners or operators would report:
 - HCFC-22 produced.
 - HFC-23 emissions and HFC-23 generated.
 - Reactants input to the HCFC-22 production process.
 - Mass of materials other than HCFC-22 and HFC-23 (e.g., unreacted reactants, hydrogen chloride [HCl], other byproducts) that occur in more than trace concentrations and that are permanently removed from the process.
 - HFC-23 packaged for sale and HFC-23 sent off site for destruction.
 - Names and addresses of facilities to which HFC-23 was sent for destruction and the quantity of HFC-23 sent to each facility.
 - Method for tracking startups, shutdowns, and malfunctions and the HFC-23 generation/emissions during these events.
 - Mass of HFC-23 emitted from equipment leaks and process vents in metric tons.
- For each HFC-23 destruction process, owners or operators would report the following on an annual basis:
 - HFC-23 emissions from, fed to, and destroyed by the thermal oxidizer.
 - The results of the annual emission test, including the HFC-23 flow rate into the destruction device, the flow rate of the gas at the outlet of the destruction device, the HFC-23 concentration in the gas at the outlet, and the calculated HFC-23 emission rate.
- Facilities with HFC-23 destruction processes would also be required to submit a one-time report of the destruction efficiency, the methods used to determine the destruction efficiency, and the method used to record the amount of HFC-23 destroyed. A revised report would have to be submitted if any changes are made that affect destruction efficiency or the HFC-23 measurement methods used.

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.