

# Suppliers of Industrial Greenhouse Gases

## Subpart OO, Greenhouse Gas Reporting Program

### OVERVIEW

Subpart OO of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR 98.410 – 98.418) applies to suppliers of industrial greenhouse gases (GHGs) that meet the Subpart OO source category definition. Some subparts have thresholds that determine applicability for reporting, and some do not. To decide whether your facility must report under this Subpart, please refer to 40 CFR 98.411 and the GHGRP [Applicability Tool](#).

This Information Sheet is intended to help facilities reporting under Subpart OO understand how the source category is defined, what GHGs must be reported, how GHG emissions must be calculated and shared with EPA, and where to find more information.



## How is This Source Category Defined?

Suppliers of industrial greenhouse gases (GHGs) include:

- Facilities that produce fluorinated GHGs, fluorinated heat transfer fluids (HTFs), or nitrous oxide (N<sub>2</sub>O).
- Bulk importers or exporters of fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O. Bulk importers or exporters of these gases must report if either their total imports or their total exports of fluorinated GHGs, fluorinated HTFs, N<sub>2</sub>O, and carbon dioxide (CO<sub>2</sub>) are greater than or equal to 25,000 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year (CO<sub>2</sub>e/yr).
- Facilities that destroy fluorinated GHGs or fluorinated HTFs must report if the total quantities of fluorinated GHGs and fluorinated HTFs that they destroy are greater than or equal to 25,000 metric tons CO<sub>2</sub>e/yr.

Production of fluorinated GHGs includes the following activities:

- Manufacture of fluorinated GHGs from any raw material or feedstock chemical.
- Manufacture of fluorinated GHGs as isolated intermediates for use in a process that will result in their transformation on site or at another facility. (*However, note that isolated intermediates that are produced and transformed at the same facility are exempt from the monitoring, reporting, and recordkeeping requirements of Subpart OO.*)
- Creation of a fluorinated GHG (except for hydrofluorocarbon-23 (HFC-23) created as a byproduct during the production of hydrochlorofluorocarbon-22 (HCFC-22)) that is captured and shipped off-site for any reason, including destruction.

Production of fluorinated HTFs is defined similarly to production of fluorinated GHGs. See “*What GHGs Must be Reported?*” below for the definition of fluorinated HTF.

Production of N<sub>2</sub>O means producing N<sub>2</sub>O by thermally decomposing ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>). Producing N<sub>2</sub>O does not include the reuse or recycling of N<sub>2</sub>O or the creation of by-products that are released or destroyed at the production facility.

Under Subpart OO, the production of fluorinated GHGs does not include the following activities:

- Reuse, or recycling, of a fluorinated GHG or N<sub>2</sub>O.
- Creation of HFC-23 as a by-product during the production of HCFC-22.
- Creation of intermediates that are created and transformed in a single process with no storage of the intermediates.
- Creation of fluorinated GHGs that are released or destroyed at the production facility before the production measurement at 40 CFR 98.414(a).



## What GHGs Must Be Reported?

Under Subpart OO, suppliers of industrial GHGs must report the GHG emissions that would result from the complete release of N<sub>2</sub>O and each fluorinated GHG or fluorinated HTF produced, imported, exported, transformed, or destroyed during the calendar year, with the following qualifications:

- Suppliers must report destruction of those fluorinated GHGs or fluorinated HTFs that were previously produced (e.g., fluorinated GHGs that are returned to the facility from the field for reclamation but are found to be irretrievably contaminated and are thus destroyed). They are not required to report destruction of fluorinated GHGs or fluorinated HTFs that are created and destroyed before the production measurement.
- Suppliers are not required to report the production, import, export, transformation, or destruction of low-concentration constituents of fluorinated GHG or fluorinated HTF products. A low-concentration constituent is a fluorinated GHG or fluorinated HTF constituent of a fluorinated GHG or fluorinated HTF product that occurs in the product below a certain concentration.
  - For purposes of fluorinated GHG and fluorinated HTF production and export, the concentration is 0.1% by mass.
  - For purposes of fluorinated GHG and fluorinated HTF import, the concentration is 0.5% by mass.
- Suppliers are not required to report the production or transformation of isolated intermediates that are produced and transformed at the same facility.
- Suppliers are not required to report the destruction of N<sub>2</sub>O, destruction of HFC-23 as defined at 40 CFR 98.150, or the dissociation of fluorinated GHGs that occurs during electronics manufacturing as defined at 40 CFR 98.90.

Importers and exporters of CO<sub>2</sub> must calculate and report annual GHG emissions of CO<sub>2</sub> according to Subpart PP (Suppliers of Carbon Dioxide), found at 40 CFR 98.420 – 98.428.

Fluorinated GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), nitrogen trifluoride (NF<sub>3</sub>), hydrofluoroethers (HFEs), and others, as defined in Subpart A, found at 40 CFR 98.6. Fluorinated GHGs do not include chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs) that are listed as ozone-depleting substances under EPA's stratospheric ozone protection regulations (found at 40 CFR Part 82). Although CFCs and HCFCs contribute to climate change, their emissions are excluded from the Greenhouse Gas Reporting Program (GHGRP) because they are already subject to the stratospheric ozone protection regulations.

Fluorinated HTFs include fluorinated GHGs used for temperature control, device testing, cleaning substrate surfaces and other parts, and soldering in processes including but not limited to certain types of electronics manufacturing production processes. Fluorinated HTFs must be reported even if their vapor pressures fall below the limit in the definition of fluorinated GHG in Subpart A (40 CFR 98.6) (1 millimeter of mercury (mm Hg) absolute at 25°C). Fluorinated HTFs include, but are not limited to, perfluoropolyethers (PFPEs), perfluoroalkanes (PFAs), perfluoroethers, tertiary perfluoroamines, and perfluorocyclic ethers. Fluorinated HTFs do not include fluorinated GHGs used as lubricants or surfactants.

If multiple GHGRP source categories are co-located at a facility, the facility may need to report GHG emissions under a different subpart. Please refer to the relevant information sheet for a summary of the rule requirements for any other source categories located at the facility.



## How Must GHG Emissions Be Calculated?

Suppliers must determine annual GHG supply flows in metric tons as follows:

- The “net” mass of each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O produced must be determined by measuring the mass of each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O produced (i.e., gas coming out of the production process) and subtracting the mass of each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O added to the process upstream (i.e., where used GHGs are added back to the production process for reclamation).
- If the measured mass includes more than one fluorinated GHG or fluorinated HTF, the concentrations of each of the fluorinated GHGs or fluorinated HTFs, other than low-concentration constituents, must be measured as specified in 40 CFR Part 98 Subpart OO. These concentrations must be multiplied by the measured mass to obtain the masses of each fluorinated GHG or fluorinated HTF coming out of the production process.
- The mass of each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O transformed must be determined by using the measured mass of the fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O fed into the transformation process and the efficiency of the transformation process (as indicated by yield calculations or quantities of unreacted fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O permanently removed from the process and recovered, destroyed, or emitted).
- The mass of each fluorinated GHG or fluorinated HTF destroyed must be determined by measuring the mass of fluorinated GHG or fluorinated HTF fed into the destruction device and applying the destruction efficiency (DE) of the destruction device.

A checklist for data that must be monitored is available here: [Subpart OO Monitoring Checklist](#).



## What Information Must Be Reported?

In addition to the information required by the General Provisions in Subpart A, found at 40 CFR 98.3(c), the following must be reported by production facilities, importers, exporters, and destruction facilities:

### **Production Facilities**

Production facilities must annually report the following information in metric tons by process for N<sub>2</sub>O and each fluorinated GHG and fluorinated HTF, as applicable:

- Mass produced, excluding mass shipped off site for destruction.
- Mass transformed on site.
- Mass that is destroyed on site and that was previously produced.
- Mass sent to another facility for transformation.
- Mass sent to another facility for destruction, excluding mass removed from the production process as by-products or waste.
- Mass that is sent to another facility for destruction and that is removed from the production process as by-products or waste.
- Mass fed into the transformation process.
- Mass that is fed into the destruction device and that was previously produced.

- Mass measured coming out of the production process.
- Mass of used product added back into the production process (e.g., because it is being reclaimed).
- Name and address of each facility to which industrial GHGs and fluorinated HTFs are sent for transformation, and the mass of N<sub>2</sub>O and each fluorinated GHG or fluorinated HTF sent to each facility.
- Name and address of each facility to which fluorinated GHGs or fluorinated HTFs are sent for destruction, and the mass of each fluorinated GHG or fluorinated HTF sent to each facility.
- Where missing data have been estimated, the reason the data were missing, the length of time the data were missing, the method used to estimate the missing data, and the estimates of those data.

Facilities that begin producing fluorinated GHGs must, within 60 days of commencing fluorinated GHG production, submit a one-time report describing:

- The methods by which the producer measures the mass of fluorinated GHGs produced, including the instrumentation used (e.g., Coriolis flowmeter, other flowmeter, weigh scale) and its accuracy and precision.
- The methods by which the producer estimates the mass of fluorinated GHGs fed into the transformation process, including the instrumentation used (e.g., Coriolis flowmeter, other flowmeter, weigh scale) and its accuracy and precision.
- The methods by which the producer estimates the fraction of fluorinated GHGs fed into the transformation process that is actually transformed, and the estimated precision and accuracy of this estimate.
- The methods by which the producer estimates the masses of fluorinated GHGs fed into the destruction device, including the methods used to estimate the concentration of the fluorinated GHGs in the destroyed material, and the estimated precision and accuracy of this estimate.
- The estimated percent efficiency of each production process for the fluorinated GHG produced.

Production facilities are also required to submit reports regarding the constituents of their products:

- Facilities that produce fluorinated GHGs were required to submit a one-time report by March 31, 2011, that included the concentration of each fluorinated GHG constituent in each fluorinated GHG product.
- Facilities that produce fluorinated HTFs that are not also fluorinated GHGs were required to submit a one-time report by March 31, 2019, that included the concentration of each fluorinated HTF or fluorinated GHG constituent in each fluorinated HTF product.
- Facilities must submit a new or revised one-time report reflecting new or changed concentrations by the next March 31<sup>st</sup> when:
  - The facility begins to produce fluorinated GHGs or fluorinated HTFs and did not submit initial reports (by March 31, 2011, or March 31, 2019, respectively), and/ or
  - The facility performs a repeat measurement that shows that the identities or concentrations of the fluorinated GHG or fluorinated HTF constituents of a product have changed.
- For N<sub>2</sub>O, saturated PFCs, SF<sub>6</sub>, and fluorinated HTFs, report the end use(s) for which each GHG or fluorinated HTF is transferred and the aggregated annual quantity of that GHG or fluorinated HTF in metric tons that is transferred to that end use application, if known.

### ***Facilities and Importers that Destroy Fluorinated GHGs or Fluorinated HTFs***

Facilities (including production facilities and destruction-only facilities) and importers that destroy fluorinated GHGs or fluorinated HTFs must also submit a one-time report that contains the following information:

- DE of each destruction process.

- Methods used to determine DE.
- Methods used to record the mass of fluorinated GHGs or fluorinated HTFs destroyed.
- Chemical identity of the fluorinated GHGs used in the performance test conducted to determine DE.
- Name of all federal or state regulations applicable to the destruction process.
- If any process changes are made affecting unit DE or the methods used to record the mass destroyed, a revised report must be submitted within 60 days of the change.
- The deadline for the one-time report depends on what is destroyed and when the destruction begins:
  - Any fluorinated GHG production facility or importer that destroys fluorinated GHGs must submit the one-time destruction report by March 31, 2011, or within 60 days of commencing fluorinated GHG destruction, whichever is later.
  - Any fluorinated GHG production facility or importer that destroys fluorinated HTFs that are not also fluorinated GHGs must submit the one-time destruction report by March 31, 2019, or within 60 days of commencing fluorinated HTF destruction, whichever is later.
  - Any facility that destroys fluorinated GHGs or fluorinated HTFs but does not produce or import fluorinated GHGs must submit the one-time destruction report by March 31, 2019, or within 60 days of commencing fluorinated GHG or fluorinated HTF destruction, whichever is later.

### **Importers**

Bulk importers of fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O must submit an annual report at the corporate level. The report must include the following information for each import (excluding transshipments, heels, and shipments of less than 25 kilograms (kg) of fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O):

- Mass in metric tons of each fluorinated GHG, each fluorinated HTF, or N<sub>2</sub>O imported in bulk.
- Mass in metric tons of each fluorinated GHG, each fluorinated HTF, or N<sub>2</sub>O that is sold or transferred to persons other than the importer for use in processes resulting in the transformation or destruction of the chemical.
- Date on which the fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O were imported.
- Port of entry through which the fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O passed.
- Country from which the imported fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O were imported.
- Harmonized tariff system (HTS) code of the fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O shipped.
- Customs entry number and importer number for each shipment.
- Mass in metric tons of each fluorinated GHG and fluorinated HTF destroyed by the importer.
- Names and addresses of the persons and facilities to which the N<sub>2</sub>O, fluorinated GHGs, or fluorinated HTFs were sold or transferred for transformation, and the quantities (metric tons) of N<sub>2</sub>O and of each fluorinated GHG and fluorinated HTF that were sold or transferred to each facility for transformation.
- Names and addresses of the persons and facilities to which the fluorinated GHGs or fluorinated HTFs were sold or transferred for destruction, and the quantities (metric tons) of each fluorinated GHG or fluorinated HTF that were sold or transferred to each facility for destruction.
- For N<sub>2</sub>O, saturated PFCs, SF<sub>6</sub>, and fluorinated HTFs, report the end use(s) for which each GHG or fluorinated HTF is transferred and the aggregated annual quantity of that GHG or fluorinated HTF in metric tons that is transferred to that end use application, if known.

### **Exporters**

Bulk exporters of fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O must submit an annual report at the corporate level. The report must include the following information for each export (excluding transshipments, heels, and

shipments of less than 25 kg of fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O):

- Mass in metric tons of each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O exported in bulk.
- Names and addresses of the exporter and recipient of the exports.
- Exporter's Employee Identification Number.
- Date on which the fluorinated GHGs, fluorinated HTFs, or N<sub>2</sub>O were exported.
- Port from which the fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O were exported.
- Countries to which each fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O were exported.
- HTS code of the fluorinated GHG, fluorinated HTF, or N<sub>2</sub>O exported.
- For N<sub>2</sub>O, saturated PFCs, SF<sub>6</sub>, and fluorinated HTFs, report the end use(s) for which each GHG or fluorinated HTF is transferred and the aggregated annual quantity of that GHG or fluorinated HTF in metric tons that is transferred to that end use application, if known.

### ***Destruction-Only Facilities***

Facilities that destroy fluorinated GHGs or fluorinated HTFs but that do not produce or import them must report the mass in metric tons of each fluorinated GHG or fluorinated HTF that is destroyed at that facility.



## **What Records Must Be Maintained?**

Reporters are required to retain records that pertain to their annual GHGRP report for at least three years after the date the report is submitted. Please see the [Subpart A Information Sheet](#) and 40 CFR 98.3(g) for general recordkeeping requirements. Specific recordkeeping requirements for Subpart OO are listed at 40 CFR 98.417.



## **When and How Must Reports Be Submitted?**

Reporters must submit their annual GHGRP reports for the previous calendar year to the EPA by March 31<sup>st</sup>, unless the 31<sup>st</sup> falls on a Saturday, Sunday, or federal holiday, in which case reports are due on the next business day. Annual reports must be submitted electronically using the [electronic Greenhouse Gas Reporting Tool \(e-GGRT\)](#), the GHGRP's online reporting system.

Additional information on setting up user accounts, registering a facility, and submitting annual reports is available on the [GHGRP Help webpage](#).



## **When Can a Facility Stop Reporting?**

A facility may discontinue reporting under several scenarios, which are summarized in Subpart A (found at 40 CFR 98.2(i)) and the [Subpart A Information Sheet](#).



## **For More Information**

For additional information on Subpart OO, please visit the [Subpart OO webpage](#). For additional information on the GHGRP, please visit the [GHGRP website](#), which includes additional information sheets, [data](#) previously reported to the GHGRP, [training materials](#), and links to Frequently Asked Questions ([FAQs](#)). For questions that cannot be answered through the GHGRP website, please contact us at: [GHGreporting@epa.gov](mailto:GHGreporting@epa.gov).

*This Information Sheet is provided solely for informational purposes. It does not replace the need to read and comply with the regulatory text contained in the rule. Rather, it is intended to help reporting facilities and suppliers understand key provisions of the GHGRP. It does not provide legal advice; have a legally binding effect; or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits with regard to any person or entity.*