

# Electronics Manufacturing



## Final Rule: Subpart I, Mandatory Reporting of Greenhouse Gases

*What Must Be Monitored for Manufacturer of Electronics Devices?*

### Measure or estimate these parameters annually

- Annual manufacturing capacity of the facility.
- Annual production in terms of substrate surface area.
- Recipe-specific utilization and by-product formation rates or facility-specific N<sub>2</sub>O utilization factors, if used.
- Annual consumption of each fluorinated GHG and N<sub>2</sub>O.
- Amount of each fluorinated GHG consumed in recipes, process sub-types, and process types; and the amount of N<sub>2</sub>O consumed in CVD and other N<sub>2</sub>O-using processes.
- Inventory of each fluorinated GHG and N<sub>2</sub>O stored in containers at the beginning of the reporting year.
- Inventory of each fluorinated GHG and N<sub>2</sub>O stored in containers at the end of the reporting year.
- Acquisitions of each fluorinated GHG and N<sub>2</sub>O through purchase records or other transactions.
- Disbursements of each fluorinated GHG and N<sub>2</sub>O.
- Number of containers of gas returned by the facility to gas distributors.
- Full capacities of gas containers used.
- Disbursements under exceptional circumstances of gases through sales or other transactions.
- Facility-wide heel factors for each gas and container type used.
- Recipe-specific, process sub-type-specific, and process type-specific fluorinated GHG apportioning factors; and CVD-specific and other N<sub>2</sub>O-using process-specific N<sub>2</sub>O apportioning factors.
- The density of each fluorinated heat transfer fluid used at the facility.
- Inventory of each fluorinated heat transfer fluid in containers, other than equipment, at the beginning of the reporting year.
- Inventory of each fluorinated heat transfer fluid in containers, other than equipment, at the end of the reporting year.
- Acquisitions of each fluorinated heat transfer fluid, including the amounts purchased from chemical suppliers, equipment suppliers with or inside equipment, and returned to the facility after off-site recycling.
- Total nameplate capacity of equipment that uses a fluorinated heat transfer fluid and is newly installed during the reporting year.
- Total nameplate capacity of equipment that uses a fluorinated heat transfer fluid and is removed from service during the reporting year.
- Disbursements of each fluorinated heat transfer fluid, including amounts returned to chemical suppliers, sold with or inside of equipment, and sent off-site for verifiable recycling or destruction.

**If controlled emissions from the use of abatement systems are reported:**

- Fraction of each fluorinated GHG used in recipes, process sub-types, or process types with abatement systems; and the fraction of N<sub>2</sub>O used in CVD or other N<sub>2</sub>O-using processes.
- Fraction of each fluorinated GHG destroyed or removed in abatement systems for recipes, process sub-types, or process types; and the fraction of N<sub>2</sub>O destroyed or removed in abatement systems for CVD or other N<sub>2</sub>O-using processes.
- Amount of each fluorinated GHG consumed for recipe, process sub-type, and process type fed into each abatement device used at the facility; the amount of N<sub>2</sub>O consumed for CVD and other N<sub>2</sub>O-using processes fed into each abatement system used at the facility.
- Properly measured and class average DREs, when the EPA default DRE factor is not used.
- Uptime of each abatement system used at the facility.
- The total time each abatement system is in operational mode and fluorinated GHGs or N<sub>2</sub>O are flowing through the connected process tools.
- The total time fluorinated GHGs or N<sub>2</sub>O are flowing through process tools connected to each abatement system.

*For more information, see the information sheet for Electronics Manufacturing at: <http://www.epa.gov/ghgreporting/reporters/subpart/i.html>.*