

Appendix D:
Greenhouse Gas Reporting Program:
Recordkeeping Requirements

Appendix D. Greenhouse Gas Reporting Program: Recordkeeping Requirements

Subpart	Recordkeeping Requirement
C—General Stationary Combustion (§98.30)	<p>The applicable records specified in 40 CFR 98.34(f) and (g), 98.35(b), and 98.36(e).</p> <p>An explanation of how the following parameters are determined from company records:</p> <ol style="list-style-type: none"> (1) Fuel consumption, when the Tier 1 and Tier 2 Calculation Methodologies are used, including cases where §98.36(c)(4) applies. (2) Fuel consumption, when solid fuel is combusted and the Tier 3 Calculation Methodology is used. (3) Fossil fuel consumption when 40 CFR 98.33(e)(2) applies to a unit that uses CEMS to quantify CO₂ emissions and that combusts both fossil and biomass fuels. (4) Sorbent usage, when 40 CFR 98.33(d) applies. (5) Quantity of steam generated by a unit when 40 CFR 98.33(a)(2)(iii) applies. (6) Biogenic fuel consumption and high heating value, as applicable, under 40 CFR 98.33(e)(5) and (e)(6). (7) Fuel usage for CH₄ and N₂O emissions calculations under 40 CFR 98.33(c)(4)(ii). (8) Mass of biomass combusted, for premixed fuels that contain biomass and fossil fuels under §98.33(e)(1)(iii). <p>Verification data (as specified in 40 CFR 98.36(e))</p> <p>Tier 2 Calculation Methodology</p> <ol style="list-style-type: none"> (1) Records of the methods used to determine the HHV for each type of fuel combusted and the date on which each fuel sample was taken, except where fuel sampling data are received from the fuel supplier. If fuel sampling data are received from the fuel supplier, dates on which the results of the fuel analyses for HHV are received <p>Tier 3 Calculation Methodology</p> <ol style="list-style-type: none"> (1) For liquid and gaseous fuel combustion, the dates and results of the initial calibrations and periodic recalibrations of the required fuel flow meters (2) For fuel oil combustion, the method from §98.34(b) used to make tank drop measurements (if applicable) (3) The methods used to determine the carbon content and (if applicable) the molecular weight of each type of fuel combusted (4) The methods used to calibrate the fuel flow meters (5) The date on which each fuel sample was taken, except where fuel sampling data are received from the fuel supplier. If fuel sampling data are received from the fuel supplier, records of the dates on which the results of the fuel analyses for carbon content and (if applicable) molecular weight are received <p>Tier 4 Calculation Methodology</p> <ol style="list-style-type: none"> (A) Whether the CEMS certification and quality assurance procedures of part 75 , part 60 , or an applicable State continuous monitoring program were used; (B) The dates and results of the initial certification tests of the CEMS (C) The dates and results of the major quality assurance tests performed on the CEMS during the reporting year, i.e., linearity checks, cylinder gas audits, and relative accuracy test audits (RATAs) (viii) If CO₂ emissions that are generated from acid gas scrubbing with sorbent injection are not captured using CEMS, report: total amount of sorbent used during the report year, in short tons; molecular weight of the sorbent; ratio (“R”) in Equation C–11 of subpart C (ix) For units that combust both fossil fuel and biomass, when biogenic CO₂ is determined according to §98.33(e)(2): annual volume of CO₂ emitted from the combustion of all fuels, i.e. , V_{total}, in scf; annual volume of CO₂ emitted from the combustion of fossil fuels, i.e. , V_{ff}, in scf (report the combustion volume of CO₂ for each fuel separately as well as the total); annual volume of CO₂ emitted from the combustion of biomass, i.e. , V_{bio}, in scf; carbon-based F-factor used in Equation C–13 of subpart C, for each type of fossil fuel combusted, in scf CO₂ per mmBtu; annual average HHV value used in Equation C–13 of subpart C, for each type of fossil fuel combusted, in Btu/lb, Btu/gal, or Btu/scf, as appropriate; total quantity of each type of fossil fuel combusted during the reporting year, in lb, gallons, or scf, as appropriate; annual biogenic CO₂ mass emissions, in metric tons; (x) When ASTM methods D7459–08 and D6866–08 are used to determine the biogenic portion of the annual CO₂ emissions from MSW combustion, as described in §98.34(d): results of each quarterly sample analysis, expressed as a decimal fraction (e.g., if the biogenic fraction of the CO₂ emissions from MSW combustion is 30 percent, report 0.30); annual biogenic CO₂ mass emissions from MSW combustion, in metric tons (xi) When ASTM methods D7459–08 and D6866–08 are used in accordance with §98.34(e) to determine the biogenic portion of the annual CO₂ emissions from a unit that co-fires biogenic fuels and non-biogenic fuels: the results of each quarterly sample analysis, expressed as a decimal fraction (e.g., if the biogenic fraction of the CO₂ emissions is 30 percent, report 0.30)
D—Electricity Generation (§98.40)	<p>Comply with the recordkeeping requirements of 40 CFR 98.3(g) and 98.37. Records retained under 40 CFR 75.57(h) of this chapter for missing data events satisfy the recordkeeping requirements of 40 CFR 98.3(g)(4) for those same events.</p>

Subpart	Recordkeeping Requirement
E—Adipic Acid Production (§98.50)	(1) Annual adipic acid production capacity (tons). (2) Records of significant changes to process. (3) Number of facility operating hours in calendar year. (4) Documentation of how accounting procedures were used to estimate production rate. (5) Documentation of how process knowledge was used to estimate abatement technology destruction efficiency. (6) Performance test reports. (7) Measurements, records and calculations used to determine reported parameters. (8) Documentation of the procedures used to ensure the accuracy of the measurements of all reported parameters, including but not limited to, calibration of weighing equipment, flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.
F—Aluminum Production (§98.60)	(1) Monthly aluminum production in metric tons. (2) Type of smelter technology used. (3) The following PFC-specific information on a monthly basis: Perfluoromethane and perfluoroethane emissions from anode effects in prebake and Søderberg electrolysis cells; Anode effect minutes per cell-day (AE-mins/cell-day), anode effect frequency (AE/cell-day), anode effect duration (minutes). (Or anode effect overvoltage factor ((kg CF4/metric ton Al)/(mV/cell day)), potline overvoltage (mV/cell day), current efficiency (%)) ; Smelter-specific slope coefficients and the last date when the smelter-specific-slope coefficients were measured. (4) Method used to measure the frequency and duration of anode effects (or to measure anode effect overvoltage And current efficiency). (5) The following CO ₂ -specific information for prebake cells: Annual anode consumption and Annual CO ₂ emissions from the smelter. (6) The following CO ₂ -specific information for Søderberg cells: Annual paste consumption and Annual CO ₂ emissions from the smelter. (7) Smelter-specific inputs to the CO ₂ process equations (e.g., levels of sulfur and ash) that were used in the calculation, on an annual basis. (8) Exact data elements required will vary depending on smelter technology (e.g., point-feed prebake or Søderberg) and process control technology (e.g., Pechiney or other).
G—Ammonia Manufacturing (§98.70)	If a CEMS is used to measure CO ₂ emissions: All requirements in 40 CFR 98.37 for the Tier 4 Calculation Methodology plus: (1) Retain records of all feedstock purchases. If a CEMS is not used to measure CO ₂ emissions: Records of all analyses and calculations conducted for reported data as listed in 40 CFR 98.76(b) plus: (1) Monthly records of carbon content of feedstock from supplier and/or all analyses conducted of carbon content.
H—Cement Production (§98.80)	If a CEMS is used to measure CO ₂ emissions: All records required in 40 CFR 98.37 for the Tier 4 Calculation Methodology. If a CEMS is not used to measure CO ₂ emissions: (1) Retain the records specified in paragraphs (1) through (3) of this section for each portland cement manufacturing facility.

Subpart	Recordkeeping Requirement
<p>I—Electronics Manufacturing (§98.90)</p>	<p>(1) All data used and copies of calculations made as part of estimating gas consumption and emissions, including all spreadsheets.</p> <p>(2) Documentation for the values used for fluorinated GHG and N₂O utilization and by-product formation rates. If facility-specific and recipe-specific utilization and by-product formation rates are used, the following records must also be retained, as applicable: (i) Complete documentation and final report for measurements for recipe-specific utilization and by-product formation rates demonstrating that the values were measured using International SEMATECH #06124825A–ENG (incorporated by reference, see 40 CFR 98.7) or, if the measurements were made prior to January 1, 2007, International SEMATECH #01104197A–XFR (incorporated by reference, see 40 CFR 98.7); (ii) Documentation that recipe-specific utilization and by-product formation rates developed for the facility are measured for recipes that are similar to those used at the facility, as defined in 40 CFR 98.98. The documentation must include, at a minimum, recorded to the appropriate number of significant figures, reactor pressure, flow rates, chemical composition, applied RF power, direct current (DC) bias, temperature, flow stabilization time, and duration; (iii) Documentation that the facility's N₂O measurements are representative of the N₂O emitting processes at the facility; and (iv) The date and results of the initial and any subsequent tests to determine utilization and by-product formation rates.</p> <p>(3) Documentation for the facility-specific engineering model used to apportion fluorinated GHG and N₂O consumption. This documentation must be part of the site GHG Monitoring Plan as required under 40 CFR 98.3(g)(5). At a minimum, retain the following: (i) A clear, detailed description of the facility-specific model, including how it was developed; the quantifiable metric used in the model; all sources of information, equations, and formulas, each with clear definitions of terms and variables; and a clear record of any changes made to the model while it was used to apportion fluorinated GHG and N₂O consumption across individual recipes (including those in a set of similar recipes), process sub-types, and/or process types and (ii) Sample calculations used for developing a recipe-specific, process sub-type-specific, or process type-specific gas apportioning factors (f_i) for the two fluorinated GHGs used at the facility in the largest quantities, on a mass basis, during the reporting year.</p> <p>(4) For each abatement system through which fluorinated GHGs or N₂O flow at the facility, for which controlled emissions are reported, the following: (i) Documentation to certify the abatement system is installed, maintained, and operated in accordance with manufacturers' specifications; (ii) Abatement system calibration and maintenance records; (iii) Where the default destruction or removal efficiency value is used, documentation from the abatement system supplier describing the equipment's designed purpose and emission control capabilities for fluorinated GHG and N₂O; and (iv) Where properly measured DRE is used to report emissions, dated certification by the technician who made the measurement that the destruction or removal efficiency is calculated in accordance with methods in EPA 430–R–10–003 (incorporated by reference, see 40 CFR 98.7), complete documentation of the results of any initial and subsequent tests, and the final report as specified in EPA 430–R–10–003 (incorporated by reference, see 40 CFR 98.7).</p> <p>(5) Purchase records for gas purchased.</p> <p>(6) Invoices for gas purchases and sales.</p> <p>(7) Documents and records used to monitor and calculate abatement system uptime.</p> <p>(8) GHG Monitoring Plans, as described in 40 CFR 98.3(g)(5), must be completed by April 1, 2011. Update the GHG Monitoring Plan to comply with 40 CFR 98.94(c) consistent with the requirements in 40 CFR 98.3(g)(5)(iii).</p>
<p>K—Ferroalloy Production (§98.110)</p>	<p>If a CEMS is used to measure CO₂ emissions :</p> <p>All requirements in 40 CFR 98.37 for the Tier 4 Calculation Methodology plus:</p> <p>(1) Monthly EAF production quantity for each ferroalloy product (tons).</p> <p>(2) Number of EAF operating hours each month.</p> <p>(3) Number of EAF operating hours in a calendar year.</p> <hr/> <p>If the carbon mass balance procedure is used to determine CO₂ emissions :</p> <p>(1) Monthly EAF production quantity for each ferroalloy product (tons).</p> <p>(2) Number of EAF operating hours each month.</p> <p>(3) Number of EAF operating hours in a calendar year.</p> <p>(4) Monthly material quantity consumed, used, or produced for each material included for the calculations of annual process CO₂ emissions (tons).</p> <p>(5) Average carbon content determined and records of the supplier provided information or analyses used for the determination for each material included for the calculations of annual process CO₂ emissions.</p> <hr/> <p>All:</p> <p>(1) Keep records that include a detailed explanation of how company records of measurements are used to estimate the carbon input and output to each EAF, including documentation of specific input or output materials excluded from Equation K-1 of subpart K that contribute less than 1 percent of the total carbon into or out of the process. Document the procedures used to ensure the accuracy of the measurements of materials fed, charged, or placed in an EAF including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.</p> <p>(2) If required to calculate CH₄ emissions for the EAF as specified in 40 CFR 98.113(d), maintain records of the total amount of each alloy product produced for the specified reporting period, and the appropriate alloy-product specific emission factor used to calculate the CH₄ emissions.</p>

Subpart	Recordkeeping Requirement
L—Fluorinated Gas Production (§98.120)	<p>Process information records:</p> <p>(1) Identify all products and processes subject to subpart L. Include the unit identification as appropriate.</p> <p>(2) Monthly and annual records, as applicable, of all analyses and calculations conducted as required under 40 CFR 98.123, including the data monitored under 40 CFR 98.124, and all information reported as required and 40 CFR 98.126.</p> <p>Scoping speciation: Retain records documenting the information reported under 40 CFR 98.126(a)(3) and (4).</p> <p>Mass-balance method: Retain the following records for each process for which the mass-balance method was used to estimate emissions. If an element other than fluorine in the mass-balance equation pursuant to 40 CFR 98.123(b)(3) is used, substitute that element for fluorine in the recordkeeping requirements of this paragraph.</p> <p>(1) The data and calculations used to estimate the absolute and relative errors associated with use of the mass-balance approach.</p> <p>(2) The data and calculations used to estimate the mass of fluorine emitted from the process.</p> <p>(3) The data and calculations used to determine the fractions of the mass emitted consisting of each reactant (FER_a), product (FEP), and by-product (FEB_k), including the preliminary calculations in 40 CFR 98.123(b)(8)(i).</p> <p>Emission factor and emission calculation factor method: Retain the following records for each process for which the emission factor or emission calculation factor method was used to estimate emissions.</p> <p>(1) Identify all continuous process vents with emissions of fluorinated GHGs that are less than 10,000 metric tons CO₂e per year and all continuous process vents with emissions of 10,000 metric tons CO₂e per year or more. Include the data and calculation used to develop the preliminary estimate of emissions for each process vent.</p> <p>(2) Identify all batch process vents.</p> <p>(3) For each vent, identify the method used to develop the factor (i.e., emission factor by emissions test or emission calculation factor).</p> <p>(4) The emissions test data and reports (see 40 CFR 98.124(c)(5)) and the calculations used to determine the process-vent-specific emission factor, including the actual process-vent-specific emission factor, the average hourly emission rate of each fluorinated GHG from the process vent during the test and the process feed rate, process production rate, or other process activity rate during the test.</p> <p>(5) The process-vent-specific emission calculation factor and the calculations used to determine the process-vent-specific emission calculation factor.</p> <p>(6) The annual process production quantity or other process activity information in the appropriate units, along with the dates and time period during which the process was operating and dates and time periods the process vents are vented to the destruction device. As an alternative to date and time periods when process vents are vented to the destruction device, a facility may track dates and time periods that process vents by-pass the destruction device.</p> <p>(7) Calculations used to determine annual emissions of each fluorinated GHG for each process and the total fluorinated GHG emissions for all processes, i.e., total for facility.</p> <p>Destruction efficiency testing: A fluorinated GHG production facility that destroys fluorinated GHGs and reflects this destruction in 40 CFR 98.123 must retain the emissions performance testing reports (including revised reports) for each destruction device. The emissions performance testing report must contain all information and data used to derive the destruction efficiency for each fluorinated GHG whose destruction the facility reflects in 40 CFR 98.123, as well as the key process and device conditions during the test. This information includes the following:</p> <p>(1) Destruction efficiency (DE) determined for each fluorinated GHG whose destruction the facility reflects in 40 CFR 98.123, in accordance with 40 CFR 98.124(g)(1)(i) through (iv).</p> <p>(2) Chemical identity of the fluorinated GHG(s) used in the performance test conducted to determine destruction efficiency, including surrogates, and information on why the surrogate is sufficient to demonstrate destruction efficiency for each fluorinated GHG, consistent with requirements in 40 CFR 98.124(g)(1)(i) through (iv), vented to the destruction device.</p> <p>(3) Mass flow rate of the stream containing the fluorinated GHG(s) or surrogate into the device during the test.</p> <p>(4) Concentration (mass fraction) of each fluorinated GHG or surrogate in the stream flowing into the device during the test.</p> <p>(5) Concentration (mass fraction) of each fluorinated GHG or surrogate at the outlet of the destruction device during the test.</p> <p>(6) Mass flow rate at the outlet of the destruction device during the test.</p> <p>(7) Test methods and analytical methods used to determine the mass flow rates and fluorinated GHG (or surrogate) concentrations of the streams flowing into and out of the destruction device during the test.</p> <p>(8) Destruction device conditions that are normally monitored for device control, such as temperature, total mass flow rates into the device, and CO or O₂ levels.</p> <p>(9) Name of all applicable Federal or State regulations that may apply to the destruction process.</p> <p>Equipment leak records: If subject to 40 CFR 98.123(d) of subpart L, maintain information on the number of each type of equipment; the service of each piece of equipment (gas, light liquid, heavy liquid); the concentration of each fluorinated GHG in the stream; each piece of equipment excluded from monitoring requirement; the time period each piece of equipment was in service, and the emission calculations for each fluorinated GHG for all processes. Depending on which equipment leak monitoring approach followed, maintain information for equipment on the associated screening data concentrations for greater than or equal to 10,000 ppmv and associated screening data concentrations for less than 10,000 ppmv; associated actual screening data concentrations; and associated screening data and leak rate data (i.e., bagging) used to develop a unit-specific correlation. If a site-specific leak detection approach is developed and followed, provide the records for monitoring events and the emissions estimation calculations, as appropriate, consistent with the approach for equipment leak emission estimation in the GHG Monitoring Plan.</p>

Subpart	Recordkeeping Requirement
L—Fluorinated Gas Production (§98.120) (cont'd)	<p>Container heel records: If residual fluorinated GHGs from containers are vented, maintain the following records of the measurements and calculations used to estimate emissions of residual fluorinated GHGs from containers: (i) If the contents of each container are measured, maintain records of these measurements and the calculations used to estimate emissions of each fluorinated GHG from each container size and type and (ii) If container heel factors to estimate emissions are developed and applied, maintain records of the measurements and calculations used to develop the heel factor for each fluorinated GHG and each container size and type and of the number of containers of each fluorinated GHG and of each container size and type returned to the facility.</p> <p>Missing data records: Where missing data have been estimated pursuant to 40 CFR 98.125, record 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.</p> <p>All:</p> <p>(1) Dated records documenting the initial and periodic calibration of all analytical equipment used to determine the concentration of fluorinated GHGs, including but not limited to gas chromatographs, gas chromatography-mass spectrometry (GC/MS), gas chromatograph-electron capture detector (GC/ECD), fourier transform infrared (FTIR), and nuclear magnetic resonance (NMR) devices, and all mass measurement equipment such as weigh scales, flowmeters, and volumetric and density measures used to measure the quantities reported under subpart L, including the industry standards or manufacturer directions used for calibration pursuant to 40 CFR 98.124(e), (f), (g), (m), and (n).</p>
N—Glass Production (§98.140)	<p>If a CEMS is used to measure emissions: All records required in 40 CFR 98.37 for the Tier 4 Calculation Methodology plus:</p> <p>(1) Monthly glass production rate for each continuous glass melting furnace (tons). (2) Monthly amount of each carbonate-based raw material charged to each continuous glass melting furnace (tons).</p> <p>If process CO₂ emissions are calculated according to the procedures specified in 40 CFR 98.143(b),</p> <p>(1) Monthly glass production rate for each continuous glass melting furnace (metric tons). (2) Monthly amount of each carbonate-based raw material charged to each continuous glass melting furnace (metric tons). (3) Data on carbonate-based mineral mass fractions provided by the raw material supplier for all raw materials consumed annually and included in calculating process emissions in Equation N-1 of subpart NN. (4) Results of all tests used to verify the carbonate-based mineral mass fraction for each carbonate-based raw material charged to a continuous glass melting furnace, including: (i) Date of test; (ii) Method(s), and any variations of the methods, used in the analyses; (iii) Mass fraction of each sample analyzed; (iv) Relevant calibration data for the instrument(s) used in the analyses; and (v) Name and address of laboratory that conducted the tests. (5) The fraction of calcination achieved for each carbonate-based raw material (percentage, expressed as a decimal), if a value other than 1.0 is used to calculate process mass emissions of CO₂.</p> <p>All:</p> <p>(1) All other documentation used to support the reported GHG emissions.</p>
O—HCFC-22 Production and HFC-23 Destruction (§98.150)	<p>HCFC-22 production facilities</p> <p>(1) The data used to estimate HFC-23 emissions. (2) Records documenting the initial and periodic calibration of the gas chromatographs, weigh scales, volumetric and density measurements, and flowmeters used to measure the quantities reported under this rule, including the industry standards or manufacturer directions used for calibration pursuant to 40 CFR 98.154(p) and (q).</p> <p>HFC-23 destruction facilities (in addition to the above)</p> <p>(1) Records documenting their one-time and annual reports in §98.156(b) through (e). (2) Records documenting the initial and periodic calibration of the gas chromatographs, weigh scales, volumetric and density measurements, and flowmeters used to measure the quantities reported under subpart O, including the industry standard practice or manufacturer directions used for calibration pursuant to 40 CFR 98.154(p) and (q).</p>
P—Hydrogen Production (§98.160)	<p>If a CEMS is used to measure CO₂ emissions: All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology.</p> <p>If a CEMS is not used to measure CO₂ emissions:</p> <p>(1) Retain records of all analyses and calculations conducted as listed in 40 CFR 98.166(b), (c), and (d).</p>
Q—Iron & Steel Production (§98.170)	<p>If a CEMS is used to measure CO₂ emissions: Retain records of the verification data required for the Tier 4 Calculation Methodology in 40 CFR 98.36(e).</p> <p>If the carbon mass balance method is used to estimate emissions for a process:</p> <p>(1) The monthly mass of each process input and output that are used to determine the annual mass.</p> <p>All:</p> <p>(1) Records of all analyses and calculations conducted, including all information reported as required under 40 CFR 98.176. (2) Production capacity (in metric tons per year) for the production of taconite pellets, coke, sinter, iron, and raw steel. (3) Annual operating hours for each taconite indurating furnace, basic oxygen furnace, non-recovery coke oven battery, sinter process, electric arc furnace, decarburization vessel, and direct reduction furnace. (4) Facilities must keep records that include a detailed explanation of how company records or measurements are used to determine all sources of carbon input and output and the metric tons of coal charged to the coke ovens (e.g., weigh belts, a combination of measuring volume and bulk density). Document the procedures used to ensure the accuracy of the measurements of fuel usage including, but not limited to, calibration of weighing equipment, fuel flow meters, coal usage including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.</p>

Subpart	Recordkeeping Requirement
R—Lead Production (§98.180)	<p>If a CEMS is used to measure combined process and combustion CO₂ emissions according to the requirements in 40 CFR 98.183(a) or (b)(1):</p> <p>All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology plus:</p> <ol style="list-style-type: none"> (1) Monthly smelting furnace production quantity for each lead product (tons). (2) Number of smelting furnace operating hours each month. (3) Number of smelting furnace operating hours in calendar year. <p>If the carbon mass balance procedure is used to determine process CO₂ emissions according to the requirements in 40 CFR 98.183(b)(2)(i) and (b)(2)(ii):</p> <ol style="list-style-type: none"> (1) Monthly smelting furnace production quantity for each lead product (tons). (2) Number of smelting furnace operating hours each month. (3) Number of smelting furnace operating hours in calendar year. (4) Monthly material quantity consumed, used, or produced for each material included for the calculations of annual process CO₂ emissions using Equation R-1 of subpart R(tons). (5) Average carbon content determined and records of the supplier provided information or analyses used for the determination for each material included for the calculations of annual process CO₂ emissions using Equation R-1 of subpart R. <p>All:</p> <ol style="list-style-type: none"> (1) Keep records that include a detailed explanation of how company records of measurements are used to estimate the carbon input to each smelting furnace, including documentation of any materials excluded from Equation R-1 of subpart R that contribute less than 1 percent of the total carbon into or out of the process. Document the procedures used to ensure the accuracy of the measurements of materials fed, charged, or placed in an smelting furnace including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.
S—Lime Manufacturing (§98.190)	<ol style="list-style-type: none"> (1) Annual operating hours in calendar year. (2) Records of all analyses (e.g. chemical composition of lime products, by type) and calculations conducted.
T—Magnesium Production (§98.200)	<ol style="list-style-type: none"> (1) Check-out and weigh-in sheets and procedures for gas cylinders. (2) Accuracy certifications and calibration records for scales including the method or manufacturer's specification used for calibration. (3) Residual gas amounts (heel) in cylinders sent back to suppliers. (4) Records, including invoices, for gas purchases, sales, and disbursements for all GHGs.
U—Misc. Uses of Carbonate (§98.210)	<ol style="list-style-type: none"> (1) Monthly carbonate consumption (by carbonate type in tons). (2) Procedures used to ensure the accuracy of the monthly measurements of carbonate consumption, carbonate input or carbonate output including, but not limited to, calibration of weighing equipment and other measurement devices. (3) Records of all analyses conducted to meet the requirements of this rule. (4) Records of all calculations conducted.
V—Nitric Acid Production (§98.220)	<p>For each nitric acid production facility:</p> <ol style="list-style-type: none"> (1) Records of significant changes to process. (2) Documentation of how process knowledge was used to estimate abatement technology destruction efficiency (if applicable). (3) Performance test reports. (4) Number of operating hours in the calendar year for each nitric acid train (hours). (5) Annual nitric acid permitted production capacity (tons). (6) Measurements, records, and calculations used to determine reported parameters. (7) Documentation of the procedures used to ensure the accuracy of the measurements of all reported parameters, including but not limited to, calibration of weighing equipment, flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.

Subpart	Recordkeeping Requirement
W—Petroleum and Natural Gas Systems (§98.230)	(1) Dates on which measurements were conducted. (2) Results of all emissions detected and measurements. (3) Calibration reports for detection and measurement instruments used. (4) Inputs and outputs of calculations or emissions computer model runs used for engineering estimation of emissions. (5) The records required under 40 CFR 98.3(g)(2)(i) shall include an explanation of how company records, engineering estimation, or best available information are used to calculate each applicable parameter under subpart W.
X—Petrochemical Production (§98.240)	If the facility complies with the CEMS measurement methodology in 40 CFR 98.243(b): All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology in 40 CFR 98.37, records of the procedures used to develop estimates of the fraction of total emissions attributable to combustion of petrochemical process off-gas as required in 40 CFR 98.246(b), and records of any annual average HHV calculations. If the facility complies with the mass balance methodology in 40 CFR 98.243(c): (1) Results of feedstock or product composition determinations conducted in accordance with 40 CFR 98.243(c)(4). (2) Start and end times and calculated carbon contents for time periods when off-specification product is produced, if the facility complies with the alternative methodology in 40 CFR 98.243(c)(4) for determining carbon content of feedstock or product. (3) A part of the monitoring plan required under 40 CFR 98.3(g)(5), record the estimated accuracy of measurement devices and the technical basis for these estimates. (4) The dates and results (e.g., percent calibration error) of the calibrations of each measurement device. If the facility complies with the combustion methodology in 40 CFR 98.243(d): All records required for the applicable Tier Calculation Methodologies in 40 CFR 98.37. If the facility complies with 40 CFR 98.243(d)(2), also keep records of the annual average flow calculations.
Y—Petroleum Refineries (§98.250)	(1) Retain the records of all parameters monitored under 40 CFR 98.255. (2) If the facility complies with the combustion methodology in 40 CFR 98.252(a), then retain under subpart Y the records required for the Tier 3 and/or Tier 4 Calculation Methodologies in 40 CFR 98.37 and keep records of the annual average flow calculations.
Z—Phosphoric Acid Production (§98.260)	For each wet-process phosphoric acid production facility: (1) Monthly mass of phosphate rock consumed by origin (as listed in Table Z-1 of subpart Z) (tons). (2) Records of all phosphate rock purchases and/or deliveries (if vertically integrated with a mine). (3) Documentation of the procedures used to ensure the accuracy of monthly phosphate rock consumption by origin, (as listed in Table Z-1 of subpart Z).
AA—Pulp and Paper Manufacturing (§98.270)	(1) GHG emission estimates (including separate estimates of biogenic CO ₂) for each emissions source listed under 40 CFR 98.270(b). (2) Annual analyses of spent pulping liquor HHV for each chemical recovery furnace at kraft and soda facilities. (3) Annual analyses of spent pulping liquor carbon content for each chemical recovery combustion unit at a sulfite or semichemical pulp facility. (4) Annual quantity of spent liquor solids combusted in each chemical recovery furnace and chemical recovery combustion unit, and the basis for determining the annual quantity of the spent liquor solids combusted (whether based on T650 om-05 Solids Content of Black Liquor, TAPPI (incorporated by reference, see 40 CFR 98.7) or an online measurement system). If an online measurement system is used, retain records of the calculations used to determine the annual quantity of spent liquor solids combusted from the continuous measurements. (5) Annual steam purchases. (6) Annual quantities of makeup chemicals used.
BB—Silicon Carbide Production (§98.280)	If a CEMS is used to measure CO ₂ emissions: All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology plus: (1) Records of all petroleum coke purchases. (2) Annual operating hours. If a CEMS is not used to measure emissions: (1) Records of all analyses and calculations conducted for reported data listed in 40 CFR 98.286(b). (2) Records of all petroleum coke purchases. (3) Annual operating hours.

Subpart	Recordkeeping Requirement
<p>CC—Soda Ash Manufacturing (§98.290)</p>	<p>If a CEMS is used to measure CO₂ emissions: All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology plus: (1) Monthly production of soda ash (tons). (2) Monthly consumption of trona or liquid alkaline feedstock (tons). (3) Annual operating hours (hours).</p> <p>If a CEMS is not used to measure CO₂ emissions: (1) Records of all analyses and calculations conducted for determining all reported data as listed in 40 CFR 98.296(b). (2) If using Equation CC-1 or CC-2 of subpart CC, weekly inorganic carbon content factor of trona or soda ash, depending on method chosen, as measured by the applicable method in 40 CFR 98.294(b) (percent by weight expressed as a decimal fraction). (3) Annual operating hours for each manufacturing line used to produce soda ash (hours). (4) Document the procedures used to ensure the accuracy of the monthly trona consumption or soda ash production measurements including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided. (5) If the facility produces soda ash using the liquid alkaline feedstock process and use the site-specific emission factor method to estimate emissions (40 CFR 98.293(b)(3)) then also retain the following relevant information: (i) Records of performance test results; and (ii) Document the procedures used to ensure the accuracy of the annual average vent flow measurements including, but not limited to, calibration of flow rate meters and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.</p>
<p>DD – Electrical Transmission and Distribution Equipment Use (§98.300)</p>	<p>All: All records of the information reported and listed in 40 CFR 98.306.</p>
<p>EE—Titanium Dioxide Production (§98.310)</p>	<p>If a CEMS is used to measure CO₂ emissions: All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology plus: (1) Records of all calcined petroleum coke purchases. (2) Annual operating hours for each titanium dioxide process line.</p> <p>If a CEMS is not used to measure CO₂ emissions: (1) Records of all calcined petroleum coke purchases (tons). (2) Records of all analyses and calculations conducted for all reported data as listed in 40 CFR 98.316(b). (3) Sampling analysis results for carbon content of consumed calcined petroleum coke (percent by weight expressed as a decimal fraction). (4) Sampling analysis results for the carbon content of carbon containing waste (percent by weight expressed as a decimal fraction), if applicable. (5) Monthly production of carbon-containing waste (tons). (6) Document the procedures used to ensure the accuracy of the monthly petroleum coke consumption and quantity of carbon-containing waste measurement including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided. (7) Annual operating hours for each titanium dioxide process line (hours).</p>
<p>FF – Underground Coal Mines (§98.320)</p>	<p>All: (1) Calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration. (2) Records of gas sales. (3) Logbooks of parameter measurements. (4) Laboratory analyses of samples.</p>

Subpart	Recordkeeping Requirement
GG—Zinc Production (§98.330)	<p>If a CEMS is used to measure CO₂ emissions: All records required under 40 CFR 98.37 for the Tier 4 Calculation Methodology plus:</p> <ol style="list-style-type: none"> (1) Monthly facility production quantity for each zinc product (tons). (2) Annual operating hours for all Waelz kilns and electrothermic furnaces used in zinc production. <p>If a CEMS is not used to measure CO₂ emissions:</p> <ol style="list-style-type: none"> (1) Records of all analyses and calculations conducted for data reported as listed in 40 CFR 98.336(b). (2) Annual operating hours for Waelz kilns and electrothermic furnaces used in zinc production. (3) Monthly production quantity for each zinc product (tons). (4) Monthly mass of zinc bearing materials, flux materials (e.g., limestone, dolomite), and carbonaceous materials (e.g., coal, coke) charged to the kiln or furnace (tons). (5) Sampling and analysis records for carbon content of zinc bearing materials, flux materials (e.g., limestone, dolomite), carbonaceous materials (e.g., coal, coke), charged to the kiln or furnace (percent by weight, expressed as a decimal fraction). (6) Monthly mass of carbon electrode consumed in for each electrothermic furnace (tons). (7) Sampling and analysis records for carbon content of electrode materials. (8) Keep records that include a detailed explanation of how company records of measurements are used to estimate the carbon input to each Waelz kiln or electrothermic furnace, as applicable to the facility, including documentation of any materials excluded from Equation GG-1 of subpart GG that contribute less than 1 percent of the total carbon inputs to the process. Also document the procedures used to ensure the accuracy of the measurements of materials fed, charged, or placed in an affected unit including, but not limited to, calibration of weighing equipment and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.
HH—Landfills (§98.340)	<ol style="list-style-type: none"> (1) Retain the calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration. (2) All measurements made to determine tare weights and working capacities by vehicle/container type if these are used to determine the annual waste quantities.
Subpart II—Industrial Wastewater Treatment (§98.350)	Calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration.
JJ—Manure Management (§98.360)	(1) The calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration.
LL—Suppliers of Coal-based Liquid Fuels (§98.380)	(1) Records according to the requirements in 40 CFR 98.397 as if they applied to the appropriate coal-to-liquid product supplier (e.g., retaining copies of all reports submitted to EPA under 40 CFR 98.386 and records to support information contained in those reports). Any records for petroleum products that are required to be retained in 40 CFR 98.397 are also required for coal-to-liquid products.
MM—Suppliers of Petroleum Products (§98.390)	<ol style="list-style-type: none"> (1) All reporters shall retain copies of all reports submitted to EPA under 40 CFR 98.396. In addition, all reporters shall maintain sufficient records to support information contained in those reports, including but not limited to information on the characteristics of their feedstocks and products. (2) Reporters shall maintain records to support quantities that are reported under subpart MM, including records documenting any estimations of missing data and the number of calendar days in the reporting year for which substitute data procedures were followed. For all reported quantities of petroleum products, natural gas liquids, and biomass, as well as crude oil quantities measured on site at a refinery, reporters shall maintain metering, gauging, and other records normally maintained in the course of business to document product and feedstock flows including the date of initial calibration and the frequency of recalibration for the measurement equipment used. (3) Reporters shall retain laboratory reports, calculations and worksheets used to estimate the CO₂ emissions of the quantities of petroleum products, natural gas liquids, biomass, and feedstocks reported under subpart MM. (4) Reporters shall maintain laboratory reports, calculations and worksheets used in the measurement of density and carbon share for any petroleum product or natural gas liquid for which CO₂ emissions were calculated using Calculation Methodology 2 of subpart MM. (5) Estimates of missing data shall be documented and records maintained showing the calculations. (6) Reporters described in subpart MM shall also retain all records described in 40 CFR 98.3(g).
NN—Suppliers of Natural Gas and Natural Gas Liquids (§98.400)	<ol style="list-style-type: none"> (1) Records of all meter readings and documentation to support volumes of natural gas and NGLs that are reported under this part. (2) Records documenting any estimates of missing metered data and showing the calculations of the values used for the missing data. (3) Calculations and worksheets used to estimate CO₂ emissions for the volumes reported under this part. (4) Records related to the large end-users identified in 40 CFR 98.406(b)(7). (5) Records relating to measured Btu content or carbon content showing specific industry standards used to develop reporter-specific higher heating values and emission factors. (6) Records of such audits as required by Sarbanes Oxley regulations on the accuracy of measurements of volumes of natural gas and NGLs delivered to customers or on behalf of customers.

Subpart	Recordkeeping Requirement
OO—Suppliers of Industrial Greenhouse Gases (§98.410)	<p>Fluorinated GHG production facility:</p> <p>(1) Dated records of the data used to estimate the data reported under 40 CFR 98.416.</p> <p>(2) Records documenting the initial and periodic calibration of the analytic equipment (including but not limited to GC, IR, FTIR, or NMR), weigh scales, flowmeters, and volumetric and density measures used to measure the quantities reported under subpart OO, including the industry standards or manufacturer directions used for calibration pursuant to 40 CFR 98.414(m) and (o).</p> <p>(3) Dated records of the total mass in metric tons of each reactant fed into the F–GHG or nitrous oxide production process, by process.</p> <p>(4) Dated records of the total mass in metric tons of the reactants, by-products, and other wastes permanently removed from the F–GHG or nitrous oxide production process, by process.</p> <hr/> <p>Fluorinated GHG production facility that destroys fluorinated GHGs: Keep records of test reports and other information documenting the facility’s one-time destruction efficiency report in 40 CFR 98.416(b).</p> <hr/> <p>Bulk importer:</p> <p>For each of the imports that they report:</p> <p>(1) A copy of the bill of lading for the import.</p> <p>(2) The invoice for the import.</p> <p>(3) The U.S. Customs entry form.</p> <hr/> <p>Bulk exporter</p> <p>For each of the exports that they report:</p> <p>(1) A copy of the bill of lading for the export and</p> <p>(2) The invoice for the import.</p> <hr/> <p>Every person who imports a container with a heel that is not reported under 40 CFR 98.416(c) shall keep records of the amount brought into the United States that document that the residual amount in each shipment is less than 10 percent of the volume of the container and will: (i) Remain in the container and be included in a future shipment; (ii) Be recovered and transformed; (iii) Be recovered and destroyed; and (iv) Be recovered and included in a future shipment.</p>
PP—Suppliers of Carbon Dioxide (CO ₂) (§98.420)	<p>(1) The owner or operator of a facility containing production process units must retain quarterly records of captured or transferred CO₂ streams and composition.</p> <p>(2) The owner or operator of a CO₂ production well facility must maintain quarterly records of the mass flow or volumetric flow of the extracted or transferred CO₂ stream and concentration and density if volumetric flow meters are used.</p> <p>(3) Importers or exporters of CO₂ must retain annual records of the mass flow, volumetric flow, and mass of CO₂ imported or exported.</p>
Subpart QQ—Importers and Exporters of Fluorinated Greenhouse Gases Contained in Pre-Charged Equipment or Closed-Cell Foams (§ 98.430)	<p>Importers:</p> <p>For each import:</p> <p>(1) A copy of the bill of lading for the import.</p> <p>(2) The invoice for the import.</p> <p>(3) The U.S. Customs entry form.</p> <p>(4) Ports of entry through which the pre-charged equipment or closed-cell foams passed.</p> <p>(5) Countries from which the pre-charged equipment or closed-cell foams were imported.</p> <p>(6) For importers that report the mass of fluorinated GHGs within closed-cell foams on a CO₂e basis, correspondence or other documents that show the importer was unable to obtain information on the identity and mass of fluorinated GHG within closed-cell foams from the foam manufacturer.</p> <hr/> <p>Exporters:</p> <p>For each export:</p> <p>(1) A copy of the bill of lading for the export and</p> <p>(2) The invoice for the export.</p> <p>(3) Ports of exit through which the pre-charged equipment or closed-cell foams passed.</p> <p>(4) Countries to which the pre-charged equipment or closed-cell foams were exported.</p> <p>(5) For exporters that report the mass of fluorinated GHGs within closed-cell foams on a CO₂e basis, correspondence or other documents that show the exporter was unable to obtain information on the identity and mass of fluorinated GHG within closed-cell foams from the foam manufacturer.</p> <hr/> <p>Importers and exporters of fluorinated GHGs:</p> <p>Persons who transship:</p> <p>Records that indicated that the pre-charged equipment or foam originated in a foreign country and was destined for another foreign country and did not enter into commerce in the United States.</p>

Subpart	Recordkeeping Requirement
Subpart RR—Geologic Sequestration of Carbon Dioxide (§98.440)	<p>As applicable, retain for at least 3 years:</p> <p>(1) Quarterly records of CO₂ received, including mass flow rate of contents of containers (mass or volumetric) at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.</p> <p>(2) Quarterly records of produced CO₂, including mass flow or volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.</p> <p>(3) Quarterly records of injected CO₂ including mass flow or volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.</p> <p>(4) Annual records of information used to calculate the CO₂ emitted by surface leakage from leakage pathways.</p> <p>(5) Annual records of information used to calculate the CO₂ emitted from equipment leaks and vented emissions of CO₂ from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.</p> <p>(6) Annual records of information used to calculate the CO₂ emitted from equipment leaks and vented emissions of CO₂ from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.</p> <p>(7) Any other records as specified for retention in the EPA-approved MRV plan.</p>
Subpart SS—Electrical Equipment Manufacture or Refurbishment (§ 98.450)	<p>(1) All information reported and listed in 40 CFR 98.456.</p> <p>(2) Accuracy certifications and calibration records for all scales and monitoring equipment, including the method or manufacturer's specification used for calibration.</p> <p>(3) Certifications of the quantity of gas, in pounds, charged into equipment at the electrical equipment manufacturer or refurbishment facility as well as the actual quantity of gas, in pounds, charged into equipment at installation.</p> <p>(4) Check-out and weigh-in sheets and procedures for cylinders.</p> <p>(5) Residual gas amounts, in pounds, in cylinders sent back to suppliers.</p> <p>(6) Invoices for gas purchases and sales.</p>
Subpart TT—Industrial Waste Landfills (§98.460)	<p>The calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration, and all measurement data used for the purposes of paragraph 40 CFR 98.460(c)(2)(xii) or used to determine landfill-specific DOC_x values.</p>
Subpart UU—Injection of Carbon Dioxide (§98.470)	<p>(1) Quarterly records of CO₂ received, including mass flow rate or contents of containers (mass or volumetric) at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams. Retain all required records for at least 3 years.</p> <p>(2) Complete monitoring plans, as described in 40 CFR 98.3(g)(5), by April 1 of the year data collection begins.</p>

Note: Many facilities that would be affected by the rule emit GHGs from multiple sources. The facility must assess every source category that could potentially apply to each when determining if a threshold has been exceeded. If the threshold is exceeded for any source category, the facility must report and keep records from emissions from all source categories, including those source categories that do not exceed the applicable threshold.