ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 98

[EPA–HQ–OAR–2009–0927; FRL–9919–70–OAR]

RIN 2060–AR78

Greenhouse Gas Reporting Program: Addition of Global Warming Potentials to the General Provisions and Amendments and Confidentiality Determinations for Fluorinated Gas Production

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is adding chemical-specific and default global warming potentials (GWPs) for a number of fluorinated greenhouse gases (F–GHGs) and fluorinated heat transfer fluids (F–HTFs) to the general provisions of the Greenhouse Gas Reporting Rule. Currently, these fluorinated GHGs and HTFs are not assigned GWPs under the rule. The changes will increase the completeness and accuracy of the carbon dioxide (CO_2)-equivalent emissions calculated and reported by suppliers and emitters of fluorinated GHGs and HTFs. The EPA is also making conforming changes to the provisions for the Electronics Manufacturing and Fluorinated Gas Production source categories. In addition, the EPA is amending certain provisions of the Fluorinated Gas

Production source category to reduce the level of detail in which emissions are reported, eliminate the mass-balance emission calculation method, and clarify the emission factor method. These amendments also include an alternative verification approach for this source category in lieu of collecting certain data elements for which the EPA has identified disclosure concerns and for which the reporting deadline was deferred until March 31, 2015. In addition, this action establishes confidentiality determinations for certain reporting requirements of the Fluorinated Gas Production source category.

DATES: This final rule is effective on January 1, 2015.

ADDRESSES: All documents in the docket are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available (*e.g.,* confidential business information (CBI) or other information whose disclosure is restricted by statute). Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *http://www.regulations.gov* or in hard copy at the Air Docket, EPA WJC West Building, Room 3334, 1301 Constitution Ave. NW., Washington, DC. This Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202)

566–1744 and the telephone number for the Air Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: Carole Cook, Climate Change Division, Office of Atmospheric Programs (MC–6207J), Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460; telephone number: (202) 343–9263; fax number: (202) 343–2342; email address: *GHGReporting@epa.gov.* For technical information, please go to the Greenhouse Gas Reporting Rule Program Web site at *http://www.epa.gov/ghgreporting/index.html.* To submit a question, select Rule Help Center, followed by Contact Us.

Worldwide Web (WWW). In addition to being available in the docket, an electronic copy of this final rule will also be available through the WWW. Following the Administrator's signature, a copy of this action will be posted on the EPA's Greenhouse Gas Reporting Program rule Web site at *http://www.epa.gov/ghgreporting/index.html.*

SUPPLEMENTARY INFORMATION:

Regulated Entities. The Administrator determined that this action is subject to the provisions of Clean Air Act (CAA) section 307(d). See CAA section 307(d)(1)(V) (the provisions of CAA section 307(d) apply to "such other actions as the Administrator may determine"). These are amendments to existing regulations and affect emitters and suppliers of fluorinated GHGs. Regulated categories and examples of affected entities include those listed in Table 1 of this preamble.

TABLE 1—EXAMPLES OF AFFECTED ENTITIES BY CATEGORY

Category	NAICS	Examples of affected facilities
Electrical Equipment Use	221121	Electric bulk power transmission and control facilities.
Electrical Equipment Manufacture or Refurbishment.	33531	Power transmission and distribution switchgear and specialty transformers manufacturing facilities.
Electronics Manufacturing	334111	Microcomputers manufacturing facilities.
	334413	Semiconductor, photovoltaic (solid-state) device manufacturing facilities.
	334419	Liquid crystal display unit screens manufacturing facilities.
	334419	Micro-electro-mechanical systems manufacturing facilities.
Fluorinated Gas Production	325120	Industrial gases manufacturing facilities.
Importers and Exporters of Pre-charged Equipment and Closed-Cell Foams.	423730	Air-conditioning equipment (except room units) merchant wholesalers.
	333415	Air-conditioning equipment (except motor vehicle) manufacturing.
	336391	Motor vehicle air-conditioning manufacturing.
	423620	Air-conditioners, room, merchant wholesalers.
	443111	Household appliance stores.
	423730	Automotive air-conditioners merchant wholesalers.
	326150	Polyurethane foam products manufacturing.
	335313	Circuit breakers, power, manufacturing.
	423610	Circuit breakers merchant wholesalers.
Magnesium Production	331419	Primary refiners of nonferrous metals by electrolytic methods.

Table 1 of this preamble is not intended to be exhaustive, but rather provides a guide for readers regarding facilities likely to be affected by this

action. Types of facilities different from those listed in the table could also be subject to reporting requirements. To determine whether you are affected by

this action, you should carefully examine the applicability criteria found in 40 CFR part 98, subpart A or the relevant criteria in subparts I, L, T, DD,

SS, OO, and QQ. If you have questions regarding the applicability of this action to a particular facility, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

What is the effective date? The final rule is effective on January 1, 2015. Section 553(d) of the Administrative Procedure Act (APA), 5 U.S.C. Chapter 5, generally provides that rules may not take effect earlier than 30 days after they are published in the **Federal Register**. EPA is issuing this final rule under section 307(d)(1) of the Clean Air Act, which states: ''The provisions of section 553 through 557 * * * of Title 5 shall not, except as expressly provided in this section, apply to actions to which this subsection applies.'' Thus, section 553(d) of the APA does not apply to this rule. EPA is nevertheless acting consistently with the purposes underlying APA section 553(d) in making this rule effective on January 1, 2015. Section 5 U.S.C. 553(d)(3) allows an effective date less than 30 days after publication ''as otherwise provided by the agency for good cause found and published with the rule.'' As explained below, EPA finds that there is good cause for this rule to become effective on January 1, 2015, even though this may result in an effective date fewer than 30 days from date of publication in the **Federal Register**.

While this action is being signed prior to December 1, 2014, there is likely to be a significant delay in the publication of this rule as it contains complex equations and tables and is relatively long. As an example, then-Acting Administrator Bob Perciasepe signed the proposed 2013 Revisions Rule on March 8, 2013, but the proposed rule was not published in the **Federal Register** until April 2, 2013.

The purpose of the 30-day waiting period prescribed in 5 U.S.C. 553(d) is to give affected parties a reasonable time to adjust their behavior and prepare before the final rule takes effect. To employ the 5 U.S.C. 553(d)(3) ''good cause'' exemption, an agency must ''balance the necessity for immediate implementation against principles of fundamental fairness which require that all affected persons be afforded a reasonable amount of time to prepare for the effective date of its ruling.'' [1] Where, as here, the final rule will be signed and made available on the EPA Web site more than 30 days before the effective date, but where the publication is likely to be delayed due to the complexity and length of the rule, the regulated entities

are afforded this reasonable amount of time. This is particularly true given that most of the revisions being made in this package provide flexibilities to sources covered by the reporting rule or require no additional action by affected sources. We do not anticipate that finalizing the GWPs in this action will expand the set of facilities required to report under the Greenhouse Gas Reporting rule. However, in the event that this occurs, these amendments include flexibility provisions such as Best Available Monitoring Methods. We balance these circumstances with the need for the amendments to be effective by January 1, 2015; a delayed effective date would result in regulatory uncertainty, program disruption, and an inability to have the amendments (many of which clarify requirements, relieve burden, and/or are made at the request of the regulated facilities) effective for the 2015 reporting year. Accordingly, we find good cause exists to make this rule effective on January 1, 2015, consistent with the purposes of 5 U.S.C. 553(d)(3).

Judicial Review. Under CAA section 307(b)(1), judicial review of this final rule is available only by filing a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit (the Court) by February 9, 2015. Under CAA section 307(d)(7)(B), only an objection to this final rule that was raised with reasonable specificity during the period for public comment can be raised during judicial review. Section 307(d)(7)(B) of the CAA also provides a mechanism for the EPA to convene a proceeding for reconsideration, ''[i]f the person raising an objection can demonstrate to EPA that it was impracticable to raise such objection within [the period for public comment] or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule.'' Any person seeking to make such a demonstration to us should submit a Petition for Reconsideration to the Office of the Administrator, Environmental Protection Agency, Room 3000, EPA WJC West Building, 1200 Pennsylvania Ave. NW., Washington, DC 20460, with a copy to the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20004. Note that under CAA section 307(b)(2), the requirements established by this final rule may not be challenged

separately in any civil or criminal proceedings brought by the EPA to enforce these requirements.

Acronyms and Abbreviations. The following acronyms and abbreviations are used in this document.

APA   Administrative Procedure Act
AR4   IPCC Fourth Assessment Report
AR5   IPCC Fifth Assessment Report
CAA   Clean Air Act
CBI   confidential business information
CFC   chlorofluorocarbon
CFR   Code of Federal Regulations
CH_4 methane
CO_2 carbon dioxide
CO_2e carbon dioxide equivalent
DE   destruction efficiency
EAR   Export Administration Regulations
EF   emission factor
ECF   emission calculation factor
e-GGRT   Electronic Greenhouse Gas Reporting Tool
EPA   U.S. Environmental Protection Agency
FR   Federal Register
F–GHG   fluorinated greenhouse gas
F–HTF   fluorinated heat transfer fluid
GHG   greenhouse gas
GHGRP   Greenhouse Gas Reporting Program
GWP   global warming potential
HCFC   hydrochlorofluorocarbon
HCFE   hydrochlorofluoroether
HFC   hydrofluorocarbon
HFE   hydrofluoroether
HQ   Headquarters
IPCC   Intergovernmental Panel on Climate Change
Kg   kilograms
Mscf   thousand standard cubic feet
$mtCO_2e$ metric tons carbon dioxide equivalent
N_2O nitrous oxide
NAICS   North American Industry Classification System
NF_3 nitrogen trifluoride
NODA   Notice of Data Availability
NTTAA   National Technology Transfer and Advancement Act of 1995
OMB   Office of Management and Budget
PFC   perfluorocarbon
RFA   Regulatory Flexibility Act
RY   reporting year
SAR   Second Assessment Report
SF_6 sulfur hexafluoride
TAR   Third Assessment Report
TPY   tons per year
UMRA   Unfunded Mandates Reform Act of 1995
UNFCCC   United Nations Framework Convention on Climate Change
U.S.   United States
WWW   Worldwide Web

Organization of This Document. The following outline is provided to aid in locating information in this preamble.

I. Background
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    B. Overview of Previously Proposed Actions Being Finalized in This Final Rule
    C. Background on the GHG Reporting Rule
    D. Legal Authority
    E. Summary of Final Amendments
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    G. Relationship Between This Final Rule, the Proposed Rule To Add GWPs to

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[1] *Omnipoint Corp.* v. *FCC,* 78 F3d 620, 630 (D.C. Cir. 1996), quoting *U.S.* v. *Gavrilovic,* 551 F.2d 1099, 1105 (8th Cir. 1977).

I. Background

A. How is this preamble organized?

The first section of this preamble contains an overview of the previously proposed actions being finalized by today's final rule, background information regarding the Greenhouse Gas Reporting Program (GHGRP), an overview of the final amendments, information on when the amendments become effective, how this rule affects confidentiality determinations, and how this rule relates to other GHG reporting actions. This section also discusses the EPA's use of our legal authority under the CAA to collect data under the Greenhouse Gas Reporting Rule, hereinafter referred to as the "GHG Reporting Rule" or "Part 98."

The second section of this preamble is organized by the provisions being amended (*e.g.,* addition of chemical-specific and default GWPs to the general provisions, emission reporting requirements for fluorinated gas production, etc.). For each set of provisions, the preamble describes the amendments that are being finalized, summarizes the changes since the proposed rule(s), summarizes the significant public comments received, and presents the EPA's response to those comments. Additional comments and responses can be found in the document, "Response to Public Comments on Proposed Addition of GWPs to Subpart A and Proposed Amendments to Subpart L" in Docket number EPA–HQ–OAR–2009–0927.

The third section of this preamble discusses the confidentiality determinations for the data reporting elements in subpart L as amended by today's action.

The fourth section of this preamble discusses the economic impacts of the amendments.

Finally, the fifth section of this preamble discusses the various statutory and executive order requirements applicable to this action.

B. Overview of Previously Proposed Actions Being Finalized in This Final Rule

In today's final rule, we are finalizing amendments and determinations proposed in four separate previous actions. The amendments and determinations that we are finalizing from three of these actions are specifically related to Fluorinated Gas Production (subpart L). The four actions include, in chronological order:

• The proposed rule entitled "Proposed Confidentiality Determinations for Data Elements Under the Mandatory Reporting of Greenhouse Gases Rule" (hereinafter referred to as "2012 Proposed Confidentiality Determinations"), published on January 10, 2012 (77 FR 1434). As discussed further in Section III of this preamble, we are finalizing many of the confidentiality determinations that were proposed in that action for the subpart L data elements that are not being removed or substantially revised elsewhere in this action.

• The proposed rule entitled "Revisions to Reporting and Recordkeeping Requirements, and Proposed Confidentiality Determinations Under the Greenhouse Gas Reporting Program" (hereinafter referred to as the "Proposed Inputs Rule"), published on September 11, 2013 (78 FR 55994). We are finalizing

the revisions proposed in that action to the subpart L reporting and recordkeeping requirements, with certain changes as discussed in Section II.B of this preamble.

• The proposed rule entitled "Greenhouse Gas Reporting Program: Amendments and Confidentiality Determinations for Fluorinated Gas Production" (hereinafter referred to as "Proposed Amendments to Subpart L"), published on November 19, 2013 (78 FR 69337). We are finalizing that action, including the proposed confidentiality determinations for new or substantially revised data elements, with certain changes as discussed in Sections II.B and III of this preamble.

• The proposed rule entitled "Greenhouse Gas Reporting Program: Addition of Global Warming Potentials" (hereinafter referred to as "Proposed Rule to Add GWPs"), published on July 31, 2014 (79 FR 44332). We are finalizing that action with certain changes as discussed in Section II.A of this preamble.

More background on the proposed amendments and determinations is provided in Sections I.C and III of this preamble.

C. Background on the GHG Reporting Rule

Part 98 was initially published in the **Federal Register** on October 30, 2009 (74 FR 56260). Part 98 became effective on December 29, 2009, and requires reporting of GHGs from certain facilities and suppliers. A subsequent document finalizing reporting requirements for Fluorinated Gas Production was published on December 1, 2010 (75 FR 74774). (The final rule published on December 1, 2010 is hereinafter referred to as the "2010 Subpart L Rule").

1. Background on Addition of GWPs to Subpart A

Table A–1 to subpart A of 40 CFR part 98 (Table A–1) is a compendium of GWP values of certain GHGs that are required to be reported under one or more subparts of the GHG Reporting Rule. These GWPs are used to convert tons of chemical into tons of CO_2-equivalent (CO_2e) for purposes of various calculations and reporting under the rule. As indicated in the **Federal Register** document for the final Part 98 (74 FR 56348), it is the EPA's intent to periodically update Table A–1 as GWPs are evaluated or reevaluated by the scientific community. This will provide a more accurate and complete account of the atmospheric impacts of GHG emissions and supplies.

GWPs that have been newly evaluated or reevaluated in the peer-reviewed

scientific literature are periodically consolidated and published by the Intergovernmental Panel on Climate Change (IPCC). The initial Table A–1 finalized in the 2009 GHG Reporting Rule included GWP values from the Second Assessment Report (SAR) and, for gases that were not included in SAR, from the Fourth Assessment Report [2] (hereinafter referred to as "IPCC AR4" or "AR4"). (In addition, Table A–1 included a GWP for one fluorinated GHG that had been published in the peer-reviewed literature but not an IPCC report, the GWP for sevoflurane.) [3] The IPCC recently published the Fifth Assessment Report (AR5), which contains GWPs for a number of fluorinated GHGs that were not included in either SAR or AR4. [4]

The scope of the fluorinated compounds reported under the GHGRP is established by the definition of "fluorinated GHG" at 40 CFR 98.6 (and, for subpart I, "fluorinated HTF" at 40 CFR 98.98), rather than by inclusion in Table A–1. The EPA therefore receives reports of emissions and supplies for a number of fluorinated compounds that have not had GWPs included in Table A–1. [5] These supplies, and a large fraction of these emissions, have been assigned a GWP of zero for purposes of GHGRP calculations and reporting, including threshold determinations. [6]

As discussed in the Proposed Rule to Add GWPs, the EPA has recently undertaken several efforts to improve

the quality and completeness of the GWPs used to calculate and report emissions under the GHGRP. On November 29, 2013, we published the final rule entitled "2013 Revisions to the Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements" (78 FR 71904, November 29, 2013; hereinafter referred to as "final 2013 Revisions Rule"). That rule amended Table A–1 to update the GWPs for GHGs included in AR4 to the AR4 values. The revisions improved the quality of reported CO_2e emissions and supply by reflecting improved scientific understanding (since the publication of SAR) of the radiative forcing and atmospheric lifetimes of the GHGs that have GWPs in AR4. In addition, for those GHGs, the revisions ensured comparability of data collected in the GHGRP to the Inventory of U.S. Greenhouse Gas Emissions and Sinks that the EPA compiles annually to meet international commitments under the United Nations Framework Convention on Climate Change (UNFCCC). Countries that submit GHG inventories under the UNFCCC have decided to use AR4 GWPs for the GHGs that have AR4 GWPs, beginning with the inventories submitted in 2015. [7]

On April 5, 2013, we published a Notice of Data Availability (NODA) (78 FR 20632) regarding another 43 fluorinated GHGs and HTFs whose GWPs were not included in Table A–1. [8] On November 19, 2013, we published the Proposed Amendments to Subpart L, including a proposed amendment to establish within subpart L a new set of default GWPs by fluorinated GHG group for the emissions calculated and reported under that subpart. The proposed set of five default GWPs was intended to replace the current set of two default GWPs in subpart L (discussed further in Section I.C.2 of this preamble) that are applied to fluorinated GHGs that are not included in Table A–1, increasing the precision and accuracy of calculated CO_2e emissions. We requested and received comments on the GWP-related

information made available by the NODA and on the proposed fluorinated GHG groups and associated default GWPs included in the Proposed Amendments to Subpart L.

On July 31, 2014, after considering the public comments on all of the actions described above, we published the Proposed Rule to Add GWPs, in which we proposed to amend Table A–1 to add chemical-specific and default GWPs. The 103 proposed chemical-specific GWPs were primarily drawn from the Fifth Assessment Report (AR5). The eight proposed default GWPs were intended for fluorinated GHGs and fluorinated HTFs for which peer-reviewed GWPs are not available in AR4, AR5, or other sources, and they were calculated and applied based on fluorinated GHG group. Each fluorinated GHG group was composed of compounds with similar chemical structures, which have similar atmospheric lifetimes and GWPs.

The Proposed Rule to Add GWPs reflected our efforts to weigh multiple considerations in updating the set of GWPs used under the GHGRP, including the accuracy of the GWPs, the consistency of those GWPs with the GWPs used in other national and international programs, the predictability and stability of the GWPs, the source of the GWPs, and the impacts of those GWPs on other regulatory programs. In the proposed rule, we weighed these considerations in the context of proposing to add GWPs for GHGs that are not presently included in Table A–1. For such GHGs, the improvement in accuracy associated with listing a GWP in Table A–1 is likely to be large, because the alternative is generally to continue to assign these GHGs a GWP of zero for purposes of the calculations and reporting under the GHGRP.

The EPA is finalizing the addition of both chemical-specific and default GWPs in this action, with certain changes following consideration of comments submitted. Responses to significant comments submitted on the proposed addition can be found in Section II of this preamble.

2. Background on Amendments to Subpart L

On January 10, 2012, the EPA published proposed determinations regarding whether the GHGRP data elements in eight subparts of Part 98, including subpart L, would or would not be entitled to confidential treatment under the CAA (77 FR 1434). In that proposed rule, the EPA proposed that the chemical identities and quantities of the fluorinated GHG emissions at the

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[2] IPCC Fourth Assessment Report (AR4), 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

[3] Langbein, T., H. Sonntag, D. Trapp, A. Hoffmann, W. Malms, E.-P. Röth, V. Mörs and R. Zellner, 1999. "Volatile anaesthetics and the atmosphere: atmospheric lifetimes and atmospheric effects of halothane, enflurane, isoflurane, desflurane and sevoflurane." British Journal of Anaesthetics 82 (1): 66–73, discussed in the Technical Support Document for Industrial Gas Supply: Production, Transformation, and Destruction of Fluorinated GHGs and N_2O, Office of Air and Radiation, USEPA, February 6, 2009.

[4] IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

[5] Such reports have been received under subparts I, L, OO, and QQ.

[6] For most subparts, including subparts I, OO, and QQ, reporters have been required to report CO_2e only for fluorinated GHGs listed in Table A–1. Subpart I included a default GWP of 2,000 for purposes of various calculations (but not reporting). Subpart L included default GWPs of 2,000 and 10,000 for purposes of both calculations and reporting.

[7] As discussed in the actions for the proposed and final 2013 Revisions Rule, the IPCC publishes Scientific Assessment Reports, including updated and expanded sets of GWPs, approximately every six years. The countries that submit annual GHG inventories under the UNFCCC update the GWPs that they use for those inventories less frequently. For example, the GWPs from the IPCC SAR have been used for UNFCCC reporting for over a decade.

[8] We had not included these compounds in the proposed 2013 Revisions Rule because documentation for GWPs for these compounds was limited at the time that the proposal was being prepared. We subsequently received more documentation from the compounds' manufacturers.

process level, reported under subpart L, are "emission data." Under section 114(c) of the CAA, "emission data" are not eligible for confidential treatment and must be made publicly available.

The EPA received two comments on that proposed rule related to subpart L. The two commenters raised concerns that the disclosure of the identity and quantities of the fluorinated GHGs emitted at the process level, from either process vents or fugitive sources, would reveal "trade secrets" regarding individual chemical production processes. In response to these comments, the EPA promulgated two sets of amendments that deferred full subpart L reporting until March, 2015, and established temporary, less detailed reporting requirements for reporting years (RYs) 2011, 2012, and 2013 (77 FR 51477, August 24, 2012, and 78 FR 71904, November 29, 2013). This was intended to allow the EPA additional time to evaluate the concerns raised by the commenters and to consider how the rule might be changed to balance these concerns with the EPA's need to obtain the data necessary to inform the development of future GHG policies and programs. The temporary provisions required facilities to report total fluorinated GHG emissions at the facility level in tons of CO_2e and, to enable such reporting for fluorinated GHGs that did not have GWPs on Table A–1, established two default GWPs.

On November 19, 2013, the EPA published the Proposed Amendments to Subpart L. In addition to the five default GWPs discussed in Section I.C.1 of this preamble, the proposed amendments included revisions to the reporting requirements of subpart L to allow more aggregated reporting (as compared to the 2010 Subpart L rule) to address potential disclosure concerns; removal of the option to use the mass-balance approach; clarification of the emission factor approach; and various technical corrections. The EPA is finalizing those amendments in this action, with certain changes following consideration of comments submitted. Responses to significant comments submitted on the proposed amendments can be found in Section II of this preamble.

On September 11, 2013 (78 FR 55994), the EPA published the Proposed Inputs Rule, in which we proposed amendments to the recordkeeping and reporting provisions of Part 98, including an alternative verification approach, to address the inputs to emission equations for which disclosure concerns were identified. The Proposed Inputs Rule included proposed revisions to the reporting and recordkeeping provisions of subpart L.

On October 24, 2014, the EPA issued the Final Inputs Rule (79 FR 63750). In that rule, the EPA did not take final action on the subpart L inputs to emission equations but expressed its intent to address those inputs in a separate rulemaking (79 FR 63754). We are finalizing in this action various proposals, including the above-mentioned proposed revisions to subpart L inputs to emission equations (with certain changes discussed in Section II of this preamble), to consolidate all of the revisions to subpart L that are related to disclosure concerns. As described in the Proposed Inputs Rule (78 FR 55994), we evaluated the data elements for which reporting was deferred to 2015. Our evaluation involved a four-step process. The results of the final evaluation are documented in the four following memoranda available in the EPA's Docket ID No. EPA–HQ–OAR–2010–0929:

• "Summary of Data Collected to Support Determination of Public Availability of Inputs to Emission Equations for which Reporting was Deferred to March 31, 2015," September 2014.

• "Final Evaluation of Competitive Harm from Disclosure of 'Inputs to Equations' Data Elements Deferred to March 31, 2015," September 2014.

• "Evaluation of Alternative Calculation Methods," August 2013.

• "Evaluation of Alternative Verification Approaches For Greenhouse Gas Reporting Rule Subparts for which Reporting of Inputs to Emission Equations was Deferred to March 31, 2015," August 2013.

D. Legal Authority

The EPA is finalizing these rule amendments under its existing CAA authority provided in CAA section 114. As stated in the preamble to the 2009 final GHG reporting rule (74 FR 56260, October 30, 2009), CAA section 114(a)(1) provides the EPA broad authority to require the information required to be gathered by this rule because such data inform and are relevant to the EPA's carrying out a wide variety of CAA provisions. See the preambles to the proposed (74 FR 16448, April 10, 2009) and final Part 98 (74 FR 56260) for further information.

In addition, the EPA is finalizing confidentiality determinations for certain data elements required under the GHG Reporting Rule under its authorities provided in sections 114, 301, and 307 of the CAA. As mentioned above, CAA section 114 provides the EPA authority to collect the information in Part 98. Section 114(c) requires that the EPA make publicly available

information obtained under section 114 except for information that is not emission data and that qualifies for confidential treatment. The Administrator has determined that this final rule is subject to the provisions of section 307(d) of the CAA.

E. Summary of Final Amendments

The EPA is amending the General Provisions of the Greenhouse Gas Reporting Rule as well as certain provisions of that rule that affect Fluorinated Gas Production facilities. The final amendments include the following changes:

• Changes to the General Provisions (subpart A) and Conforming Changes to Electronics Manufacturing (subpart I) and Fluorinated Gas Production (subpart L):

—Revision of Table A–1 to subpart A of 40 CFR part 98 (Table A–1), the compendium of GWPs used to calculate CO_2e under the GHGRP, to add chemical-specific GWPs for approximately 100 fluorinated GHGs. The chemical-specific GWPs are primarily drawn from AR5.

—Revision of Table A–1 to add default GWPs for fluorinated GHGs and fluorinated HTFs for which peer-reviewed GWPs are not available. These default GWPs are calculated and assigned based on fluorinated GHG group and are based on the chemical-specific GWPs for the compounds in Table A–1 as revised by this rule, that is, on a combination of AR4 and AR5 GWPs.

—Conforming changes to subparts I and L, which previously included their own default GWPs for purposes of certain CO_2e calculations.

• Changes to Fluorinated Gas Production (subpart L):

—Revision of the reporting requirements of subpart L to allow more aggregated reporting as compared to the 2010 Subpart L rule to address potential disclosure concerns (see Section II.B.1 of this preamble).

—Addition of a requirement to use an EPA-provided inputs verification tool (IVT) for certain inputs to subpart L emission equations for which reporting was deferred to 2015 and for which disclosure concerns have been identified.

—Removal of the requirement to report certain inputs to subpart L emission equations for which reporting was deferred to 2015 and for which disclosure concerns have been identified. (This includes the revising of Table A–7 in Subpart A.)

—Removal of the requirement to report certain inputs to subpart L emission

equations for which reporting was deferred to 2015 due to their not being useful for data verification or informing future GHG policy development in the absence of other deferred inputs for which the reporting requirements are being removed.

—Removal of the option to use the mass-balance approach.
—Clarification of the emission factor approach.
—Various technical corrections.

F. When will these amendments apply?

Amendments to Table A–1. The amendments to Table A–1 apply to reporting that occurs in calendar year 2015 and subsequent years. For all subparts except subpart L, discussed below, this is limited to the reporting of data gathered in 2014 (*i.e.,* RY 2014) and future years.[9]

Subpart L. With one exception, discussed below, the amendments apply to reporting under 40 CFR part 98, subpart L (subpart L) that occurs in calendar year 2015 and subsequent years. This includes reporting of information for RY 2014 and subsequent reporting years (*i.e.,* information related to emissions that occur in 2014 and subsequent years). It also includes reporting of certain information for RYs 2011, 2012, and 2013. We previously deferred full reporting for RYs 2011 and 2012 under the rule titled ''2012 Technical Corrections, Clarifying and Other Amendments to the Greenhouse Gas Reporting Rule, and Confidentiality Determinations for Certain Data Elements of the Fluorinated Gas Source Category'' (77 FR 51477; August 24, 2012). We deferred full reporting for RY

2013 under the Final 2013 Revisions Rule.

Under today's final action, the requirement to enter inputs to subpart L emission equations into IVT applies to RY 2015 and all subsequent reporting years. As discussed further in Section II.B.1 of this preamble, starting with RY 2015 (which is required to be reported by March 31, 2016) will allow the EPA to develop a subpart L IVT module that integrates the subpart L reporting requirements being finalized in this action.

G. Relationship Between This Final Rule, the Proposed Rule To Add GWPs to Table A–1, and the Proposed Amendments to Subpart L

This rule is finalizing both the Proposed Rule to Add GWPs to Table A–1 and the Proposed Amendments to Subpart L. As discussed in the Proposed Rule to Add GWPs, the default GWPs that are being finalized in this action will apply across Part 98, including to subpart L. Thus, subpart L will no longer include its own default GWPs. This will simplify subpart L and ensure future as well as current consistency among the default GWPs applied across Part 98.

H. How will these amendments affect confidentiality determinations?

In this action, we are finalizing confidentiality determinations for certain subpart L data elements. The EPA proposed confidentiality determinations for the subpart L data elements (77 FR 1434, January 10, 2012), and then proposed additional confidentiality determinations for new or substantially revised subpart L data

elements (78 FR 69337, November 19, 2013). The final confidentiality determinations for these data elements together with our rationale are discussed in detail in Section III.A of this preamble. For four of the existing data elements, we are not finalizing confidentiality determinations for the reasons discussed in Section III.A. In addition, as with inputs to emission equations in other Part 98 subparts, we are not finalizing confidentiality determinations for any subpart L inputs to emission equations data. Lastly, the amendments remove certain other existing subpart L reporting requirements, while continuing to require that records be kept of these elements. Because the EPA is finalizing the removal of these data elements, the EPA is not taking final action on the previously proposed confidentiality determinations for the removed data elements.

II. Overview of Final Amendments and Responses to Public Comments

A. Amendments to Table A–1

1. Summary of Final Amendments to Table A–1

As proposed, we are amending Table A–1 to subpart A of Part 98 to add chemical-specific and default GWPs. We are adding peer-reviewed, chemical-specific GWPs for the 98 compounds listed in Table 2 of this preamble. To reflect the latest scientific consensus regarding fluorinated GHGs that do not have GWPs in AR4, we are adopting the GWPs provided for 97 of these 98 compounds in Table 8.A.1 of AR5.[10]

TABLE 2—CHEMICAL-SPECIFIC GWPs FOR ADDITION TO TABLE A–1

Common or trade name	Chemical name(s)	CAS No.	Chemical formula	AR5 GWP (100-year)
Saturated HFCs				
Saturated HFCs with two or fewer carbon-hydrogen bonds				
HFC-227ca	1,1,1,2,2,3,3-Heptafluoropropane	2252–84–8	$CF_3CF_2CHF_2$	2640
HFC-329p	1,1,1,2,2,3,3,4,4-Nonafluorobutane	375–17–7	$CHF_2CF_2CF_2CF_3$	2360
Saturated HFCs with three or more carbon-hydrogen bonds				
HFC-245cb	1,1,1,2,2-Pentafluoropropane	1814–88–6	$CF_3CF_2CH_3$	4620
HFC-245ea	1,1,2,3,3-Pentafluoropropane	24270–66–4	$CHF_2CHFCHF_2$	235
HFC-245eb	1,1,1,2,3-Pentafluoropropane	431–31–2	$CH_2FCHFCF_3$	290
HFC-263fb	1,1,1-Trifluoropropane	421–07–8	$CH_3CH_2CF_3$	76
HFC-272ca	2,2-Difluoropropane	420–45–1	$CH_3CF_2CH_3$	144
Saturated PFCs				
PFC-6-1-12	Hexadecafluoroheptane	335–57–9	C_7F_{16}; $CF_3(CF_2)_5CF_3$	7820

[9] With the exception of subpart L, we are not requiring or allowing reporters to submit revised certified reports for RYs 2010, 2011, 2012, or 2013

with CO_2e values calculated using the revised GWPs. This is the same approach as we adopted in the final Revisions Rule (78 FR 71939).

[10] For one compound, CF_3I, which was inadvertently excluded from Table A–1 previously, we are adding an AR4 GWP as proposed.

TABLE 2—CHEMICAL-SPECIFIC GWPs FOR ADDITION TO TABLE A–1—Continued

Common or trade name	Chemical name(s)	CAS No.	Chemical formula	AR5 GWP (100-year)
PFC-7-1-18	Octadecafluorooctane	307–34–6	C_8F_{18}; $CF_3(CF_2)_6CF_3$	7620
	Perfluorodecalin (cis)	60433–11–6	$Z-C_{10}F_{18}$	7240
	Perfluorodecalin (trans)	60433–12–7	$E-C_{10}F_{18}$	6290
Saturated HFEs				
Saturated HFEs and HCFEs with one carbon-hydrogen bond				
HFE-329me3	1,1,1,2,3,3-Hexafluoro-3-(trifluoromethoxy)propane	428454–68–6	$CF_3CFHCF_2OCF_3$	4550
	1,1,1,2,2,3,3-Heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)-propane ...	3330–15–2	$CF_3CF_2CF_2OCHFCF_3$	6490
Saturated HFEs and HCFEs with two carbon-hydrogen bonds				
HFE-236ca	1-(Difluoromethoxy)-1,1,2,2-tetrafluoroethane	32778–11–3	$CHF_2OCF_2CHF_2$	4240
HCFE-235ca2; enflurane	2-Chloro-1-(difluoromethoxy)-1,1,2-trifluoroethane	13838–16–9	CHF_2OCF_2CHFCl	583
HG-02	1-(Difluoromethoxy)-2-(2-(difluoromethoxy)-1,1,2,2-tetrafluoroethoxy)-1,1,2,2-tetrafluoroethane.	205367–61–9	$HF_2C-(OCF_2CF_2)_2-OCF_2H$	3825
HG-03	1,1,3,3,4,4,6,6,7,7,9,9,10,10,12,12-Hexadecafluoro-2,5,8,11-tetraoxadodecane.	173350–37–3	$HF_2C-(OCF_2CF_2)_3-OCF_2H$	3670
HG-20	(Difluoromethoxy)((difluoromethoxy)difluoromethoxy)difluoromethane.	249932–25–0	$HF_2C-(OCF_2)_2-OCF_2H$	5300
HG-21	1,1,3,3,5,5,7,7,8,8,10,10-Dodecafluoro-2,4,6,9-tetraoxadecane	249932–26–1	$HF_2C-OCF_2CF_2OCF_2OCF_2O-CF_2H$	3890
HG-30	1,1,3,3,5,5,7,7,9,9-Decafluoro-2,4,6,8-tetraoxanonane	188690–77–9	$HF_2C-(OCF_2)_3-OCF_2H$	7330
	1,1,3,3,3,4,4,6,6,7,7,9,9,10,10,12,12,13,13,15,15-eicosafluoro-2,5,8,11,14-Pentaoxapentadecane.	173350–38–4	$HCF_2O(CF_2CF_2O)_4CF_2H$	3630
	1,1,2-Trifluoro-2-(trifluoromethoxy)-ethane	84011–06–3	$CHF_2CHFOCF_3$	1240
	Trifluoro(fluoromethoxy)methane	2261–01–0	CH_2FOCF_3	751
Saturated HFEs and HCFEs with three or more carbon-hydrogen bonds				
HFE-263m1; R-E-143a	1,1,2,2-Tetrafluoro-1-(trifluoromethoxy)ethane	690–22–2	$CF_3OCH_2CH_3$	29
HFE-347mmz1; Sevoflurane	2-(Difluoromethoxy)-1,1,1,3,3,3-hexafluoropropane	28523–86–6	$(CF_3)_2CHOCH_2F$	216
HFE-365mcf2	1-Ethoxy-1,1,2,2,2-pentafluoroethane	22052–81–9	$CF_3CF_2OCH_2CH_3$	58
HFE-356mff2	bis(2,2,2-trifluoroethylTrifluoroethyl) ether	333–36–8	$CF_3CH_2OCH_2CF_3$	17
HG'-01	1,1,2,2-Tetrafluoro-1,2-dimethoxyethane	73287–23–7	$CH_3OCF_2CF_2OCH_3$	222
HG'-02	1,1,2,2-Tetrafluoro-1-methoxy-2-(1,1,2,2-tetrafluoro-2-methoxyethoxy)ethane.	485399–46–0	$CH_3O(CF_2CF_2O)_2CH_3$	236
HG'-03	3,3,4,4,6,6,7,7,9,9,10,10-Dodecafluoro-2,5,8,11-tetraoxadodecane.	485399–48–2	$CH_3O(CF_2CF_2O)_3CH_3$	221
	Difluoro(methoxy)methane	359–15–9	CH_3OCHF_2	144
	2-Chloro-1,1,2-trifluoro-1-methoxyethane	425–87–6	CH_3OCF_2CHFCl	122
	1-Ethoxy-1,1,2,2,3,3,3-heptafluoropropane	22052–86–4	$CF_3CF_2CF_2OCH_2CH_3$	61
	2-Ethoxy-3,3,4,4,5-pentafluorotetrahydro-2,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-furan.	920979–28–8	$C_{12}H_5F_{19}O_2$	56
	1-Ethoxy-1,1,2,3,3,3-hexafluoropropane	380–34–7	$CF_3CHFCF_2OCH_2CH_3$	23
	Fluoro(methoxy)methane	460–22–0	CH_3OCH_2F	13
	1,1,2,2-Tetrafluoro-3-methoxy-propane; Methyl 2,2,3,3-tetrafluoropropyl ether.	60598–17–6	$CHF_2CF_2CH_2OCH_3$	0.49
	1,1,2,2-Tetrafluoro-1-(fluoromethoxy)ethane	37031–31–5	$CH_2FOCF_2CF_2H$	871
	Difluoro(fluoromethoxy)methane	461–63–2	CH_2FOCHF_2	617
	Fluoro(fluoromethoxy)methane	462–51–1	CH_2FOCH_2F	130
Fluorinated formates				
	Trifluoromethyl formate	85358–65–2	$HCOOCF_3$	588
	Perfluoroethyl formate	313064–40–3	$HCOOCF_2CF_3$	580
	1,2,2,2-Tetrafluoroethyl formate	481631–19–0	$HCOOCHFCF_3$	470
	Perfluorobutyl formate	197218–56–7	$HCOOCF_2CF_2CF_2CF_3$	392
	Perfluoropropyl formate	271257–42–2	$HCOOCF_2CF_2CF_3$	376
	1,1,1,3,3,3-Hexafluoropropan-2-yl formate	856766–70–6	$HCOOCH(CF_3)_2$	333
	2,2,2-Trifluoroethyl formate	32042–38–9	$HCOOCH_2CF_3$	33
	3,3,3-Trifluoropropyl formate	1344118–09–7	$HCOOCH_2CH_2CF_3$	17
Fluorinated acetates				
	Methyl 2,2,2-trifluoroacetate	431–47–0	CF_3COOCH_3	52
	1,1-Difluoroethyl 2,2,2-trifluoroacetate	1344118–13–3	$CF_3COOCF_2CH_3$	31
	Difluoromethyl 2,2,2-trifluoroacetate	2024–86–4	$CF_3COOCHF_2$	27
	2,2,2-Trifluoroethyl 2,2,2-trifluoroacetate	407–38–5	$CF_3COOCH_2CF_3$	7
	Methyl 2,2-difluoroacetate	433–53–4	HCF_2COOCH_3	3
	Perfluoroethyl acetate	343269–97–6	$CH_3COOCF_2CF_3$	2.1
	Trifluoromethyl acetate	74123–20–9	CH_3COOCF_3	2.0
	Perfluoropropyl acetate	1344118–10–0	$CH_3COOCF_2CF_2CF_3$	1.8
	Perfluorobutyl acetate	209597–28–4	$CH_3COOCF_2CF_2CF_2CF_3$	1.6
	Ethyl 2,2,2-trifluoroacetate	383–63–1	$CF_3COOCH_2CH_3$	1.3
Carbonofluoridates				
	Methyl carbonofluoridate	1538–06–3	$FCOOCH_3$	95

TABLE 2—CHEMICAL-SPECIFIC GWPS FOR ADDITION TO TABLE A–1—Continued

Common or trade name	Chemical name(s)	CAS No.	Chemical formula	AR5 GWP (100-year)
	1,1-Difluoroethyl carbonofluoridate	1344118–11–1	$FCOOCF_2CH_3$	27
Fluorinated alcohols other than fluorotelomer alcohols				
	2,2,3,3,4,4,4-Heptafluorobutan-1-ol	375–01–9	$C_3F_7CH_2OH$	25
	2,2,2-Trifluoroethanol	75–89–8	CF_3CH_2OH	20
	2,2,3,4,4,4-Hexafluoro-1-butanol	382–31–0	$CF_3CHFCF_2CH_2OH$	17
	2,2,3,3-Tetrafluoro-1-propanol	76–37–9	$CHF_2CF_2CH_2OH$	13
	2,2-Difluoroethanol	359–13–7	CHF_2CH_2OH	3
	2-Fluoroethanol	371–62–0	CH_2FCH_2OH	1.1
	4,4,4-Trifluorobutan-1-ol	461–18–7	$CF_3(CH_2)_2CH_2OH$	0.05
Unsaturated compounds				
Unsaturated PFCs				
PFC-1114; TFE	Tetrafluoroethylene (TFE); Perfluoroethene	116–14–3	$CF_2=CF_2$; C_2F_4	0.004
PFC-1216; Dyneon HFP	Hexafluoropropylene (HFP); Perfluoropropene	116–15–4	C_3F_6; $CF_3CF=CF_2$	0.05
PFC C-1418	Perfluorocyclopentene; Octafluorocyclopentene	559–40–0	$c\text{-}C_5F_8$	1.97
	Perfluorobut-2-ene	360–89–4	$CF_3CF=CFCF_3$	1.82
	Perfluorobut-1-ene	357–26–6	$CF_3CF_2CF=CF_2$	0.10
	Perfluorobuta-1,3-diene	685–63–2	$CF_2=CFCF=CF_2$	0.003
Unsaturated HFCs and unsaturated HCFCs				
HFC-1132a; VF2	Vinylidiene fluoride	75–38–7	$C_2H_2F_2$, $CF_2=CH_2$	0.04
HFC-1141; VF	Vinyl fluoride	75–02–5	C_2H_3F, $CH_2=CHF$	0.02
(E)-HFC-1225ye	(E)-1,2,3,3,3-Pentafluoroprop-1-ene	5595–10–8	$CF_3CF=CHF(E)$	0.06
(Z)-HFC-1225ye	(Z)-1,2,3,3,3-Pentafluoroprop-1-ene	5528–43–8	$CF_3CF=CHF(Z)$	0.22
Solstice 1233zd(E)	trans-1-Chloro-3,3,3-trifluoroprop-1-ene	102687–65–0	$C_3H_2ClF_3$; $CHCl=CHCF_3$	1.34
HFC-1234yf; HFO-1234yf	2,3,3,3-Tetrafluoroprop-1-ene	754–12–1	$C_3H_2F_4$; $CF_3CF=CH_2$	0.31
HFC-1234ze(E)	(E)-1,3,3,3-Tetrafluoroprop-1-ene	1645–83–6	$C_3H_2F_4$; trans-$CF_3CH=CHF$	0.97
HFC-1234ze(Z)	(Z)-1,3,3,3-Tetrafluoroprop-1-ene	29118–25–0	$C_3H_2F_4$; cis-$CF_3CH=CHF$; $CF_3CH=CHF$	0.29
HFC-1243zf; TFP	Trifluoro propene (TFP); 3,3,3-Trifluoroprop-1-ene	677–21–4	$C_3H_3F_3$, $CF_3CH=CH_2$	0.12
(Z)-HFC-1336	(Z)-1,1,1,4,4,4-Hexafluorobut-2-ene	692–49–9	$CF_3CH=CHCF_3(Z)$	1.58
HFO-1345zfc	3,3,4,4,4-Pentafluorobut-1-ene	374–27–6	$C_2F_5CH=CH_2$	0.09
Capstone 42-U	Perfluorobutyl ethene (42-U); 3,3,4,4,5,5,6,6,6-Nonafluorohex-1-ene.	19430–93–4	$C_6H_3F_9$, $CF_3(CF_2)_3CH=CH_2$	0.16
Capstone 62-U	Perfluorohexyl ethene (62-U); 3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooct-1-ene.	25291–17–2	$C_8H_3F_{13}$, $CF_3(CF_2)_5CH=CH_2$	0.11
Capstone 82-U	Perfluorooctyl ethene (82-U); 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-Heptadecafluorodec-1-ene.	21652–58–4	$C_{10}H_3F_{17}$, $CF_3(CF_2)_7CH=CH_2$	0.09
Unsaturated Halogenated Ethers				
PMVE; HFE-216	Perfluoromethyl vinyl ether (PMVE)	1187–93–5	$CF_3OCF{\square}={\square}CF_2$	0.17
Fluoroxene	(2,2,2-Trifluoroethoxy)ethene	406–90–6	$CF_3CH_2OCH=CH_2$	0.05
Other short-lived compounds				
Fluorinated Ketones				
Novec 1230	FK-5-1-12 Perfluoroketone; FK-5-1-12myy2; Perfluoro(2-methyl-3-pentanone).	756–13–8	$CF_3CF_2C(O)CF(CF3)_2$	0.1
Fluorinated Aldehydes				
	3,3,3-Trifluoro-propanal	460–40–2	CF_3CH_2CHO	0.01
Fluorotelomer Alcohols				
	3,3,4,4,5,5,6,6,7,7,7-Undecafluoroheptan-1-ol	185689–57–0	$CF_3(CF_2)_4CH_2CH_2OH$	0.43
	3,3,3-Trifluoropropan-1-ol	2240–88–2	$CF_3CH_2CH_2OH$	0.35
	3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-Pentadecafluorononan-1-ol	755–02–2	$CF_3(CF_2)_6CH_2CH_2OH$	0.33
	3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-Nonadecafluoroundecan-1-ol.	87017–97–8	$CF_3(CF_2)_8CH_2CH_2OH$	0.19
Compounds with carbon-iodine bonds				
	Trifluoroiodomethane	2314–97–8	CF_3I	[a] 0.4
Other compounds				
Halon 1202	Dibromodifluoromethane	75–61–6	CBr_2F_2	231
Halon-2311; Halothane	2-Bromo-2-chloro-1,1,1-trifluoroethane	151–67–7	$CHBrClCF_3$	41

[a] AR4.

We are also adding 12 default GWPs to Table A–1 for fluorinated GHGs and HTFs that do not have peer-reviewed GWPs. As proposed, the default GWPs are based on the average GWPs of groups of chemically similar fluorinated GHGs because chemically similar fluorinated GHGs have similar atmospheric lifetimes and GWPs. The fluorinated GHG groups are: (1) Fully fluorinated GHGs and HTFs, (2) saturated hydrofluorocarbons (HFCs) with two or fewer carbon-hydrogen bonds, (3) saturated HFCs with three or more carbon-hydrogen bonds, (4) saturated hydrofluoroethers (HFEs) and hydrochlorofluoroethers (HCFEs) with one carbon-hydrogen bond, (5) saturated HFEs and HCFEs with two carbon-hydrogen bonds, (6) saturated HFEs and HCFEs with three or more carbon-hydrogen bonds, (7) fluorinated formates, (8) fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols, (9) unsaturated perfluorocarbons (PFCs), unsaturated

HFCs, unsaturated hydrochlorofluorocarbons (HCFCs), unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones, (10) fluorotelomer alcohols, (11) fluorinated GHGs with carbon-iodine bonds, and (12) other fluorinated GHGs and HTFs. For each fluorinated GHG group, we are basing the default GWP on the average of the chemical-specific GWPs of compounds that belong to that group and that are either on Table A–1 already or are being added to Table A–1 under this rule. The fluorinated GHG groups and associated default GWPs are listed in Table 3 of this preamble. We are also finalizing a requirement that if a fluorinated GHG does not have a chemical-specific GWP in Table A–1 of this subpart, reporters must report the fluorinated GHG group of which that fluorinated GHG is a member. This will allow the EPA to verify that the calculation of carbon dioxide equivalent was conducted correctly.

Finally, although we do not anticipate that finalizing the GWPs in this action will expand the set of facilities required to report under the GHGRP, we are including special provisions for facilities that become newly subject to one or more subparts of Part 98 due to the addition of GWPs, as proposed. Facilities or suppliers that become newly subject to a subpart due to the addition of GWPs are not required to report their 2014 emissions or supplies under that subpart, but they are required to report their 2015 emissions or supplies under that subpart by March 31, 2016. From January 1, 2015, to March 31, 2015, they may use best available monitoring methods (BAMM) for any parameter that cannot reasonably be measured according to the monitoring and QA/QC requirements of the subpart, and they may submit a request to EPA to use BAMM beyond March 31. That request must be submitted by January 31, 2015.

TABLE 3—DEFAULT GWPs FOR ADDITION TO TABLE A–1

Fluorinated GHG group	GWP (100-year)
Fully fluorinated GHGs	10,000
Saturated HFCs with two or fewer carbon-hydrogen bonds	3,700
Saturated HFCs with three or more carbon-hydrogen bonds	930
Saturated HFEs and HCFEs with one carbon-hydrogen bond	5,700
Saturated HFEs and HCFEs with two carbon-hydrogen bonds	2,600
Saturated HFEs and HCFEs with three or more carbon-hydrogen bonds	270
Fluorinated formates	350
Fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols	30
Unsaturated PFCs, unsaturated HFCs, unsaturated HCFCs, unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones	1
Fluorotelomer alcohols	1
Fluorinated GHGs with carbon-iodine bond(s)	1
Other fluorinated GHGs	2000

2. Changes From the Proposed Rule

In the Proposed Rule to Add GWPs, we proposed to add 103 chemical-specific GWPs and eight default GWPs to Table A–1. The proposed fluorinated GHG groups for which we proposed default GWPs were: (1) Fully fluorinated GHGs and HTFs, (2) saturated HFCs, (3) partially segregated saturated HFEs and HCFEs, (4) non-segregated saturated HFEs and HCFEs, (5) unsaturated PFCs, unsaturated HFCs, unsaturated HCFCs, unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones, (6) fluorotelomer alcohols, (7) fluorinated GHGs with carbon-iodine bonds, and (8) other GHGs and HTFs.

The EPA is making minor changes to the proposed chemical-specific GWPs and is revising the fluorinated GHG groups and associated default GWPs

based on comments. Regarding the chemical-specific GWPs, one commenter noted that two stereoisomers proposed for addition to Table A–1 had notation errors (switched E/Z notations); this has been corrected in the final Table A–1. The same commenter also observed that the proposed chemical-specific GWPs included some duplicate compounds with different GWPs. In the final Table A–1, we have removed five duplicate compounds. Two sets of duplicates resulted from our inadvertent proposed addition to Table A–1 of a GWP for a chemical that already had a GWP listed. These included two fluorinated alcohols with the CAS numbers 422–05–9 and 920–66–1. In these cases, we are retaining the previously listed GWPs, based on AR4. Three sets of duplicates came from AR5. These included two HFEs and one

fluorinated alcohol with the CAS numbers 173350–37–3, 205367–61–9, and 375–01–9, respectively. In these cases, we used the average of the two GWPs, since both values had appeared in the peer-reviewed literature and had been listed by the AR5 authors. With the removal of the five duplicate chemicals, a total of 98 chemical-specific GWPs are being added to Table A–1.

We are making three changes to the proposed fluorinated GHG groups and default GWPs. First, we are dividing the group of saturated HFCs into two groups based on the number of carbon-hydrogen bonds in the compound. Second, we are dividing the group of saturated HFEs and HCFEs into three groups based on the number of carbon-hydrogen bonds in the compound rather than two groups based on the position of the fluorine atoms in the compound

(segregated vs. partially segregated). Third, we are dividing the proposed "other" category into three groups: (1) Fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols, (2) fluorinated formates, and (3) other fluorinated GHGs and HTFs. We discussed these options (or similar ones, as described below) in the proposed rule and supporting analyses. We received one comment supporting the division of the "other" category into three categories and received no negative comments on the other options. After further consideration, we have concluded that the advantages identified in the proposed rule of these approaches, which are discussed further below, merit their adoption. These changes result in the creation of four additional fluorinated GHG groups and default GWPs, increasing the total number of default GWPs from eight to 12. As discussed further below, all of the changes are expected to increase the accuracy and precision of the default GWPs.

As noted in the Proposed Rule to Add GWPs, the number of carbon-hydrogen bonds in each saturated HFC and HFE (and HCFE) is significantly correlated (negatively) with the atmospheric lifetime and GWP of that compound. For the saturated HFEs, the number of carbon-hydrogen bonds predicts the GWP more precisely than does the position of the fluorine atoms in the compound. Moreover, the number of carbon-hydrogen bonds in each compound is likely to be known, facilitating the correct categorization and default GWP selection for each saturated HFC or HFE that does not have a chemical-specific GWP on Table A–1. Thus, grouping the compounds according to the number of carbon-hydrogen bonds overcomes the drawback we had identified in previous proposed rules [11] to dividing up the saturated HFCs and HFEs (and HCFEs) by atmospheric lifetime, which is that the atmospheric lifetime of a particular saturated HFC or HFE may not be known. This enables us to establish

groups of saturated HFCs and HFEs that have similar GWPs and to set considerably more precise default GWPs for these groups.

In the Proposed Rule to Add GWPs, we proposed to define the "other" group as including both specific compound types (*i.e.,* fluorinated acetates, carbonofluoridates, fluorinated alcohols other than fluorotelomer alcohols, fluorinated formates, and brominated compounds) and other compound types not otherwise included in any of the proposed fluorinated GHG groups. We proposed to set the default GWP for the group at 110 based on the average of the GWPs that had been measured for the specific compound types in the group. However, we requested comment on the option of setting a higher default (2000) to account for the possibility that newly synthesized compound types (which would be assigned the default for the "other" group) would have GWPs whose average was near the overall average for fluorinated GHGs. We noted that the disadvantage of this option was that it would apply an inappropriately high GWP to the specific compound types included in the group.

In the supporting analysis for the proposed default GWPs, we further noted that the fluorinated formates had significantly higher GWPs than most of the other specific compound types in the "other" group. The average GWP for the formates was about 350, while that for most of the other identified compounds in the group was 20.[12] (One other outlier in the group, dibromodifluoromethane (Halon 1202), has a GWP of 231.) Noting this difference, one commenter on the Proposed Rule to Add GWPs recommended separating the "other" group into three categories: Those with GWPs less than 20, those with GWPs between 20 and 100, and those with GWPs over 100. In addition, two commenters on the Proposed Amendments to Subpart L, which had included a similar grouping and default GWP for "other" compounds, had suggested separating compound types with average GWPs near 10 or 20 into a separate group.

In the final rule, we are removing all but one of the identified, specific compound types from the "other" category and are separating them into two groups, each of which is defined to contain specific compound types.[13]

This approach allows us to set default GWPs that better reflect the average GWPs of both of the new, smaller groups. A default GWP of 350 is established for fluorinated formates, while a default of 30 is established for fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols. The new default GWPs differ by more than an order of magnitude, considerably increasing their precision for their respective groups.

In addition, we are establishing a separate group for fluorinated GHGs that do not fall into any of the specific fluorinated GHG groups and are assigning it a default GWP of 2000. This "catch-all" group, which retains the title "Other fluorinated GHGs and HTFs," includes types of fluorinated GHGs and HTFs whose GWPs have not been studied. Given the removal of most of the specific, relatively low-GWP compound types from this group, a default GWP of 2000 is likely to better estimate the GWPs of the compounds that remain in the group than the proposed default GWP of 110, which was based on the GWP values for a small, unrepresentative subset of fluorinated GHGs (*i.e.,* acetates, fluoridates, fluorinated alcohols other than fluorotelomer alcohols, and formates). The default of 2000 is based on the average for all fluorinated GHGs. Where the GWPs of particular fluorinated GHG groups have not been published in the peer-reviewed literature, it is reasonable to assume they may fall anywhere on the continuum of GWPs measured for fluorinated GHGs in general. Based on

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[11] In both the Proposed Amendments to Subpart L and the Proposed Rule to Add GWPs, we requested comment on the option of dividing the saturated HFCs and saturated HFEs into two or more groups each based on atmospheric lifetime or a structural characteristic (such as the number of carbon-hydrogen bonds) correlated with atmospheric lifetime (78 FR 69343 and 79 FR 44341). On the Proposed Amendments to Subpart L, we received a comment recommending that we divide the saturated HFEs into two groups based on a characteristic correlated with atmospheric lifetime and GWP, the position of the fluorine atom. We received no negative comments on the option of dividing the groups into more groups based on atmospheric lifetime.

[12] This value rose to 30 after the removal of the duplicate compounds, three of which were fluorinated alcohols in the "other" group.

[13] The exception is the fluorinated GHGs that include bromine, which we are keeping in the "Other fluorinated GHGs" category, as proposed. Although we proposed to group (and are grouping)

fluorinated GHGs that include chlorine with similar fluorinated GHGs that do not include chlorine (*e.g.,* grouping the HCFEs with the HFEs), we did not propose to take this approach with bromine-containing compounds, because their atmospheric behavior can be significantly different from that of similar fluorinated GHGs that do not contain bromine. For example, dibromodifluoromethane, which is a saturated compound consisting of carbon, fluorine, and bromine, is analogous to fully fluorinated GHGs, but it has a much shorter atmospheric lifetime and lower GWP than those compounds (231 vs. 10,000). (Other saturated compounds consisting of carbon, fluorine, and bromine, which are not included on Table A–1 because they are regulated as ozone-depleting substances under 40 CFR part 82 and are therefore exempt from the definition of "fluorinated GHG," have higher GWPs; but their average GWP of 2,400 is still significantly lower than the average for fully fluorinated GHGs.) 2-bromo-2-chloro-1,1,1-trifluoroethane, which is a saturated compound consisting of carbon, fluorine, chlorine, bromine, and hydrogen, is analogous to HFCs that include two or fewer carbon-hydrogen bonds, but it has a much shorter atmospheric lifetime and lower GWP than those compounds (41 vs. 3700). (Dibromodifluoromethane and 2-bromo-2-chloro-1,1,1-trifluoroethane are the only bromine-containing fluorinated GHGs with chemical-specific GWPs on Table A–1.)

this principle, a default GWP of 2000 is currently used in subpart I and subpart L for, respectively, any fluorinated GHG whose GWP is not on Table A–1, and for any fluorinated GHG, other than a fully fluorinated GHG, whose GWP is not on Table A–1. While the default GWPs in subparts I and L are now being replaced by the default GWPs in Table A–1, which reflect more precise information regarding the atmospheric behavior of a number of fluorinated GHG groups, it is appropriate to retain the default of 2000 where more precise information is not available.

3. Summary of Comments and Responses Regarding Proposed Rule To Add GWPs

Comment: All commenters who expressed an opinion on the addition of chemical-specific GWPs to Table A–1 supported the addition of most of the AR5 GWPs that the EPA proposed to add. (As discussed further below, two commenters objected to the addition of very-low-GWP compounds to Table A–1.) Several commenters noted that the IPCC Assessment Reports represent the most widely recognized source of peer-reviewed GWP values, and that the GWPs in AR5 are the most up-to-date and accurate of those published in these Reports.

Two commenters advocated the adoption of AR5 GWPs for all of the compounds in Table A–1, noting that these represented the most recent and accurate GWP values available. One of these commenters asserted that the EPA's proposal to use AR5 in most but not all cases is ''internally inconsistent, arbitrary, and irrational,'' stating that GHGRP data are the basis for many agency analyses and decisions and that use of the proposed GWP would render agency decisions less reliable. The commenter noted that the EPA could use other means to harmonize information with the UNFCCC reporting conventions.

Two other commenters disagreed with the addition to Table A–1 of compounds with very low GWPs, stating that the proposal would make them, in one of the commenter's words, subject to ''regulation under the GHGRP and also potentially under the prevention of significant deterioration (PSD) and Title V permitting programs.'' The commenters argued that addition of a large number of low GWP materials to Table A–1 could substantially increase the reporting burden on U.S. semiconductor manufacturers without significantly increasing the accuracy of facility reporting or the Inventory as a whole.

Three of the commenters urged the EPA to modify the definition of fluorinated GHG to exclude fluorinated compounds with very low GWPs. They stated that these products were produced in low volumes and emitted in still lower volumes, meaning that their GWP-weighted emissions did not justify the significant administrative burden of reporting them.

Response: The EPA agrees that the AR5 GWPs are the most up-to-date and accurate available. As proposed, we are adopting AR5 GWPs for compounds for which AR4 GWPs are not available but are retaining the AR4 GWPs where they are available. As established in the Revisions Rule and reiterated in the Proposed Rule to Add GWPs, this is to remain consistent with UNFCCC reporting, which requires the use of AR4 GWPs for the GHGs with GWPs listed in AR4, and also with other national and international GHG analyses, policies, and programs. (For more discussion of these analyses and programs, see the Revisions Rule at 78 FR 71912–13). It is also consistent with the approach we took in the original Table A–1, which included GWPs from the SAR where they were available (consistent with UNFCCC requirements) but also included GWPs from AR4 for compounds for which SAR GWPs were not available.

The benefits of using the same GWPs as other analyses, policies, and programs, particularly the *Inventory of U.S. Greenhouse Gas Emissions and Sinks,* are discussed at length in the Revisions Rule (78 FR 71911–12). Briefly, they include facilitating more efficient review and comparison of data collected through the GHGRP and other U.S. climate programs, reducing the potential errors that may arise when comparing multiple data sets or converting GHG emissions or supply based on separate GWPs, and reducing the burden for reporters and agencies to keep track of separate GWPs when submitting information to these programs. In the Revisions Rule, we weighed these benefits against the increase in accuracy that would result from adopting more recent GWPs to better characterize national GHG emissions and inform EPA policies. We concluded that, where the choice is between an AR4 GWP and an AR5 GWP, the potential gain in accuracy does not justify the loss of consistency with UNFCCC reporting (and associated policy analysis) that would result.

We are adding the GWPs of very-low-GWP fluorinated GHGs to Table A–1 as proposed. It is important to note that this does not expand the set of fluorinated GHGs and HTFs that must

be reported under the GHGRP because that is established by the definition of ''fluorinated GHG'' at 40 CFR 98.6 (and, for subpart I, ''fluorinated HTF'' at 40 CFR 98.98), rather than by inclusion in Table A–1. As noted above and in the Proposed Rule to Add GWPs, semiconductor facilities, as well as other emitters and suppliers of fluorinated GHGs that do not have GWPs on Table A–1, are already required to report (and do report) emissions and supplies, respectively, of these GHGs and HTFs.

Regarding the potential impact on permitting requirements of including very-low-GWP gases in Table A–1, including these gases is expected to have negligible impact on permitting requirements. As explained in the proposal to this rule, the potential impact of these proposed changes on permitting requirements is narrowed by the U.S. Supreme Court decision in *Utility Air Regulatory Group* v. *EPA* (No. 12–1146), which found that greenhouse gases cannot be treated as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or title V permit (79 FR 44344).

As the EPA explained following the Supreme Court decision, the EPA will no longer require PSD permits at stationary sources if GHGs are the only pollutant (i) that the source emits or has the potential to emit above the major source thresholds, or (ii) for which there is a significant emissions increase and a significant net emissions increase from a modification, and the EPA will no longer require a source to obtain a title V permit solely because it emits or has the potential to emit GHGs above the major source thresholds.[14] Thus, the EPA will only apply the permitting requirements to which the commenters generally refer to GHGs at new and modified sources that trigger permitting requirements on the basis of their emissions of air pollutants other than GHGs (also known as ''anyway sources''). Accordingly, PSD's best available control technology (BACT) requirement will still apply to GHGs emitted at or above certain thresholds by anyway sources, and title V permits for anyway sources will need to incorporate and assure compliance with those BACT limits that remain

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[14] Memorandum for Janet G. McCabe and Cynthia Giles to Regional Administrators, *Next Steps and Preliminary Views on the Application of Clean Air Act Permitting Programs to Greenhouse Gases Following the Supreme Court's Decision in Utility Air Regulatory Group* v. *Environmental Protection Agency* (July 24, 2014) (''July 24 Memo''), at 2, *available at http://www.epa.gov/nsr/documents/ 20140724memo.pdf.*

applicable requirements under a PSD permit issued to the source.[15]

The revised GWP values will apply to future permitting actions when determining whether a source required to obtain a PSD permit based on emissions of pollutants other than GHGs has emissions of GHGs that exceed the threshold at which BACT applies to emissions of greenhouse gases from such sources. While some refinements to EPA's regulations may be forthcoming based on the Supreme Court decision described above, under regulations that remain applicable at this time, the EPA has defined greenhouse gases for permitting purposes as the aggregate group of the following six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. See, *e.g.,* 40 CFR 51.166(b)(48)(i). The amount of such emissions is quantified for permitting purposes by multiplying the mass of each of these six gases by the associated GWP in Table A–1. 40 CFR 51.166(b)(48)(ii). Any changes to GWP values for substances that are among the six gases listed above will become a part of the calculation of CO_2e for permitting purposes. In this context, because the revised GWPs are so low and the magnitude of their emissions in tons of chemical is not expected to be large, the revisions to table A–1 in this rule are not expected to have a significant impact on application of the BACT requirement to GHGs at sources that trigger the requirement to obtain a permit based on emission of other pollutants.[16]

Contrary to the generalized concerns of the commenters, we believe that listing of very-low-GWP gases in Table A–1 will facilitate informed decision-making regarding the relative climate impacts of these and other fluorinated GHGs in industrial, commercial, and household use, while having only a negligible permitting impact. Based on that information, the EPA may evaluate in the future whether it would be appropriate to modify the definition of fluorinated greenhouse gas, which is outside the scope of this rulemaking.

Comment: Three commenters supported the proposed fluorinated GHG groups and default GWPs for

[15] July 24 Memo at 3–5.

[16] The addition of very-low-GWP gases in Table A–1 that are not among the six listed above does not result in these gases becoming subject to permitting requirements under the Clean Air Act. The EPA had made clear that regulations that require monitoring and reporting of pollutant emissions do not make a pollutant subject to regulation. See 75 FR 17004, and 40 CFR 52.21(b)(49).

fluorinated GHGs without peer-reviewed GWPs. One of the commenters noted that the proposed groups and GWPs reflected comments submitted on the Proposed Amendments to Subpart L, and two of the commenters agreed that default GWPs based on fluorinated GHG groups, though possibly less than fully accurate, would lead to more accurate estimates of atmospheric impacts than would a GWP of zero.

Two commenters disagreed with the proposed fluorinated GHG groups and default GWPs. These commenters stated that adding default GWPs to Table A–1 could have permitting implications and that GWPs that have not been peer-reviewed are more likely to change significantly, which may have compliance implications. One of the commenters also asserted that the fluorinated GHG groups were very broad, and that companies may need to exert considerable effort to determine which of the materials used at their facilities fall into which group and therefore trigger regulatory requirements. The other commenter argued that establishing default GWPs was inconsistent with the practice of the IPCC and therefore diverged from accepted international practice. As a result, U.S. facilities would be subject to a different standard than competitors elsewhere. This commenter also noted that default GWPs have not been published in a peer-reviewed scientific journal, which the EPA acknowledged ''helps to ensure that the data and methods used to evaluate the GWPs are consistent with current scientific good practice and thereby helps to ensure that the resulting GWPs are accurate.''

Response: As proposed, we are adding default GWPs to Table A–1. These default GWPs will be applied to fluorinated GHGs that do not have chemical-specific GWPs on Table A–1 (*i.e.,* fluorinated GHGs that did not have chemical-specific peer-reviewed GWPs available in time for this rulemaking). This is to ensure that the atmospheric impacts of all fluorinated GHGs are accounted for in GHGRP calculations and reporting.

The 12 default GWPs have been developed and will be applied based on fluorinated GHG group. For each fluorinated GHG group, we are basing the default GWP on the average of the peer-reviewed, chemical-specific GWPs of compounds that belong to that group and that are either on Table A–1 or are being added to Table A–1 under this rule. As noted by several commenters and by us in the proposed rule, the default GWPs are not expected to be as precise as chemical-specific GWPs, because they are based on averages for

groups that exhibit some variation in their GWPs (although the groups have been selected to minimize this variation). Nevertheless, for each fluorinated GHG group, the default GWP is expected to be a non-biased predictor of the GWPs of fluorinated GHGs that belong to that group, including fluorinated GHGs that have not had chemical-specific GWPs published in the peer-reviewed literature. Importantly, the default GWP is expected to be a better predictor (and in some cases, a far better predictor) of such GWPs than zero, which is always an underestimate but is the GWP that has been used to date when no chemical-specific GWP was on Table A–1. Thus, adding the default GWPs to Table A–1 will significantly increase the accuracy of the CO_2e emissions that are calculated and reported under the GHGRP.

As noted in the proposal, the default GWPs will also increase the stability and predictability of calculated CO_2e emissions from facilities. As chemical-specific GWPs for GHGs are developed, peer reviewed, and added to Table A–1, the change from each default GWP to the chemical-specific GWP is likely to be smaller than the change from zero to the chemical-specific GWP. This will significantly reduce the magnitude of any future revisions to or inconsistencies in the time series of CO_2e emissions. At the same time, having a default GWP for each GHG may allow the EPA to update Table A–1 less frequently because the default would reduce the error in CO_2e estimates that presently arises from not having a chemical-specific GWP for that GHG on Table A–1.

Furthermore, we do not agree that adding chemical-specific GWPs and default GWPs at this time, or any future action to change these GWP values, will have implications for stationary source permitting that would justify not proceeding with this final action. The potential implications for permitting fall into two main categories. The first relates to the prospective triggering of permitting requirements at a source based on calculations of CO_2e using GWP values in regulations. The second relates to compliance with emissions limits in previously issued permits that may have limits expressed in the form of CO_2e calculated using the GWP values.

As a general matter and as explained above, the potential impact of these changes to GWP values on the PSD and title V permit requirements that might apply to sources based on the GWP values has been narrowed by the U.S. Supreme Court decision in *Utility Air*

Regulatory Group v. *EPA* (No. 12–1146). Under that decision, sources cannot become subject to the requirement to obtain a permit as a major source under these permitting programs based solely on their emissions of GHGs, thereby limiting implications of changes to GWP values in this context. As also discussed above, the revisions to Table A–1 are otherwise not expected to have a significant impact on application of the PSD BACT requirement to GHGs at sources that continue to require a PSD permit based on emissions of other pollutants.

With respect to permits that have already been issued, as explained in a prior rulemaking relating to revisions to GWP values in Table A–1, the EPA does not expect the revised GWPs to be applied retroactively to prior permitting determinations and does not expect that previously approved PSD or title V permits would be reopened solely based on application of the revised GWPs in Table A–1 to prior years' emissions (78 FR 71916). As the EPA previously explained, compliance with GHG permit limits in existing, final PSD permits ''may be determined based on the GWPs that were effect at the time of permit issuance (even if the permit does not specify the applicable GWP value)'' (78 FR 71916). Likewise, with regard to determinations of whether PSD permitting requirements applied to a source previously permitted, the EPA has already explained that ''GWP revisions should not affect past permitting actions for a source that has obtained a final PSD permit before these revisions to Part 98 become effective, regardless of whether or not that PSD permit included GHG limits'' (78 FR 71916). Should sources have specific questions regarding application of the new GWP values to previously approved PSD or title V permits, they should contact their permitting authority or their respective EPA regional office.

While there should be little to no impact on both categories of permitting requirements based on this final action to add chemical-specific GWPs and default GWPs for the reasons explained above, sources are encouraged to talk to the appropriate permitting authority to the extent that questions arise regarding specific permitting requirements that apply or might apply to their GHG emissions.

One commenter argued that establishing default GWPs was inconsistent with the practice of the IPCC and therefore diverged from accepted international practice, subjecting U.S. facilities to a different standard than competitors in the World Semiconductor Council (WSC) and elsewhere. As noted above, we believe that consistency between the GHGRP and other national and international policies and programs is important for the GHGs that are included in AR4; for these GHGs, the improvement in accuracy that would be associated with the use of more recent GWPs (*e.g.,* from the Comprehensive Review or from AR5) does not justify the loss of consistency with UNFCCC reporting that would result. However, for the GHGs that are not included in AR4, the improvement in accuracy associated with the assignment of default GWPs rather than a GWP of zero does not result in a loss of consistency with UNFCCC reporting, since the UNFCCC does not require the use of AR4 GWPs for reporting emissions of these GHGs. In fact, the use of default GWPs facilitates compliance with the UNFCCC Reporting Guidelines, which ''strongly encourage'' Annex I Parties ''to also report emissions and removals of additional GHGs'' (*i.e.,* GHGs whose GWPs are not included in AR4). To the extent that other consistency issues arise, the EPA and GHGRP stakeholders such as the WSC can make adjustments to GHGRP or other data sets to ensure comparability between those sets (*e.g.,* to measure progress toward WSC goals).

Regarding the comment that it would be difficult to assign fluorinated GHGs to the correct fluorinated GHG group (and therefore to select the correct default GWP), we have deliberately defined the groups based on easily ascertained criteria related to chemical structure. To further facilitate selection of the correct default GWP, we intend to automatically assign it through our data system for commonly used fluorinated GHGs and HTFs that are reported under the GHGRP, such as fully fluorinated HTFs used in electronics manufacturing. Thus, we do not expect that selection of the correct default GWP will impose a significant burden on reporting facilities.

B. Amendments to Subpart L Reporting Requirements

1. Summary of Final Amendments to Subpart L Reporting Requirements

As proposed, the EPA is permanently amending the subpart L reporting requirements to require reporting at a more aggregated level than in the 2010 subpart L rule. Specifically, we are requiring owners and operators of facilities producing fluorinated gases to report (1) emissions by fluorinated GHG group (chemical type) at the process level for each generically defined production or transformation process, and (2) emissions by chemical at the facility level for certain fluorinated GHG emissions. These changes apply only to emissions from production and transformation processes; emissions from venting of container heels and destruction of previously produced fluorinated GHGs must be reported by chemical and by process as required by the 2010 Subpart L Rule.

Fluorinated GHG emissions from production and transformation processes must be reported by chemical at the facility level when (a) the fluorinated GHG is emitted in quantities above 1,000 metric tons CO_2e ($mtCO_2e$) and the facility produces more than one fluorinated gas product,[17] or (b) for facilities that produce only one fluorinated gas product, the fluorinated GHG emitted is a major fluorinated GHG constituent of a fluorinated gas product and the fluorinated gas product is sold or otherwise transferred to another person. (Other fluorinated GHG emissions from production and transformation processes at the facility level will be reported by chemical type.) Where the emission factor or emission calculation factor approaches are used, facilities are required to further disaggregate process emissions by emission type (*i.e.,* into vented vs. leaked emissions). In addition to the changes above, we are replacing the requirements to report process-specific emission factors, activity data, and destruction efficiencies with a requirement to identify, as a range, the level by which the emissions of each process are reduced or controlled (*e.g.,* by destruction devices). We are also removing the requirement that facilities report the following data elements: the contents, locations, and functions of the streams analyzed under the scoping speciation (40 CFR 98.126(a)(3) and (a)(4)).

All of these changes (as well as the revised default GWPs and fluorinated GHG groups, discussed in Sections II.A and II.B.5 of this preamble) will apply to (previously deferred) reporting for RYs 2011, 2012, and 2013 (*i.e.,* reporting of emissions that occurred in 2011, 2012, and 2013), as well as to reporting for emissions that occur in 2014 and later years.

To consolidate all of the revisions to subpart L that are related to disclosure concerns, the EPA also is finalizing in this action the alternative verification approach that was proposed for subpart L in the Proposed Inputs Rule. (In the Proposed Amendments to Subpart L, we

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[17] We are defining fluorinated gas product as the product of the process, including isolated intermediates.

discussed the relationship between those amendments and the amendments that were proposed in the Proposed Inputs Rule, and we made available a version of the subpart L regulatory text as it would be amended by both actions (78 FR 69340).) The alternative verification approach for subpart L is the same as that in the Final Inputs Rule, except that the requirement for subpart L reporters to use IVT will apply to RY 2015 and later reporting years. This is necessary to allow the EPA to develop a subpart L IVT module that integrates the subpart L reporting requirements being finalized in this action.

As noted in the Proposed Inputs Rule, the inputs verification tool is designed to be used concurrently with annual reporting by facilities. While additional verification could be conducted on past years' data if the inputs verification tool were used for those years, for the reasons stated in the Proposed Inputs Rule, the EPA has determined that the added benefit does not outweigh the burden that would be required for facilities to use the inputs verification tool for years that will already have been reported in full by the time the tool is available for use. For further details, please see the Proposed Inputs Rule (78 FR 56004). As noted above, facilities will be submitting full subpart L reports for Reporting Years 2011, 2012, and 2013 in calendar year 2015.

As described in the Proposed Inputs Rule, the EPA is currently using a two-step verification approach for the GHGRP:

• Initial automated review of reported data, using an electronic data quality assurance program built into the data system, for use by reporters and the EPA to help assure the completeness and accuracy of data.

• Based on the initial review results, follow up with facilities regarding potential errors, discrepancies, or questions, including on-site audits.

Until the Inputs Verification Tool is in place, the EPA intends to continue to verify subpart L emissions using this approach. The EPA may also perform manual checks. More specifically, the EPA intends to look at expected emission levels and patterns, internal consistency, consistency with emissions reported previously by the same facility, consistency with emissions reported by other fluorinated gas production facilities, and report completeness.

We are also finalizing revisions to Table A–7 by removing all subpart L inputs to equations from Table A–7. With the exception of the data elements in 98.126(b)(10), (11), and (12), which were addressed in the Proposed Amendments to Subpart L, the Proposed Inputs Rule proposed to remove all subpart L inputs to equations from Table A–7. We are finalizing these provisions as proposed. With respect to the data elements in 98.126(b)(10), (11), and (12), these data elements were proposed to be removed from the subpart L provisions in the Proposed Amendments to Subpart L; however, we inadvertently did not make the corresponding changes in Table A–7. As a result, consistent with the Proposed Amendments to Subpart L, we are making the corresponding change in Table A–7 and removing the data elements in 98.126(b)(10), (11), and (12) from Table A–7 in this action.

2. Changes From the Proposed Rules

a. Changes to Provisions Proposed in the Proposed Amendments to Subpart L

The EPA is making minor changes to the reporting requirements proposed in the Proposed Amendments to Subpart L to clarify and streamline them. First, we are not finalizing two proposed reporting provisions that would be redundant with two existing reporting provisions. Specifically, we are not finalizing the proposed paragraphs 98.126(a)(6)(i) and (ii), which would have required reporting of emissions from destruction of previously produced fluorinated GHGs and emissions of container heels, because paragraphs 98.126(g) and (h) already require this reporting. However, we are slightly revising 98.126(h) to require reporting of aggregate emissions of each fluorinated GHG across container types and sizes (rather than for each container type and size) as would have been required by the proposed 98.126(a)(6)(i). Reporting of emissions by container type and size is no longer useful for verification given the removal of the requirement to report heel factors by container type and size. Second, we are clarifying in several places that the requirements to report facility-level emissions by chemical or by fluorinated GHG group apply only to emissions from production and transformation processes. Because emissions from container venting and destruction of previously produced fluorinated GHGs are already required to be reported by chemical from each of these activities, it is not necessary to report them again at the facility level (except as part of the total CO_2e emissions for the facility reported under 98.3(c)(4)(i)).

Third, the EPA is removing 98.126(f)(5), the requirement to submit a revised destruction device testing report when changes to the destruction device would be expected to affect the destruction efficiency (DE). This change is necessary for consistency with our removal of the requirement to report the original DE at 98.126(f)(1). As discussed in the Proposed Amendments to Subpart L, we identified potential disclosure concerns associated with reporting of exact destruction efficiencies at the process level under subpart L. These concerns apply to revised destruction efficiencies as well as to original destruction efficiencies. To ensure that we continue to receive useful information on the level of control for each process, we are finalizing our proposal to replace the requirement to report exact destruction efficiencies with the requirement to report, as a range, the effective DE of each process (78 FR 69348–49).

In addition to these changes, we have revised the proposed fluorinated GHG groups and default GWPs in response to comments. These changes are discussed below in Section II.B.2.b.

b. Changes to Provisions Proposed Relative to the Alternative Verification Approach

As previously mentioned, the Proposed Inputs Rule included an alternative verification approach and associated reporting and recordkeeping requirements. This section discusses the changes since proposal.

First, we are not finalizing the entry of the inputs to the mass-balance equations into IVT as proposed in the Proposed Inputs rule. Shortly after issuing the Proposed Inputs Rule, we proposed to remove the mass-balance approach altogether in the Proposed Amendments to Subpart L for the reasons provided in the proposal. As discussed in Section II.C of this preamble, we are finalizing the removal of the mass-balance method through this action. Because the mass-balance equations are no longer in subpart L, we are not requiring the entry of the inputs to those equations into IVT.

Second, we are requiring entry of chemical-specific emissions from leaks for each process into IVT. In the Proposed Amendments to Subpart L, we proposed to replace the reporting of this data element with the reporting of CO_2e emissions by fluorinated GHG group from leaks for each process, which we believe will provide us adequate information for policy purposes while addressing the potential disclosure concerns associated with the reporting of chemical-specific emissions from process leaks. In our effort to consolidate all subpart L proposed revisions, including IVT, into one final action, we note that entry of chemical-specific emissions from leaks into IVT

will facilitate verification of the replacement data reporting element. Specifically, entry into IVT of chemical-specific emissions from leaks for each process will allow us to verify (1) the reported CO_2e emissions by fluorinated GHG group from leaks for each process, and (2) the emissions reported either by chemical or by fluorinated GHG group (in CO_2e) at the facility level. Emissions from leaks are included in facility totals in either chemical-specific or CO_2e terms, depending on the magnitude of the emissions of that chemical at the facility level. They are therefore a necessary link between the emissions from vents calculated by Equations L–21, L–22, L–26, and L–27, which the EPA proposed to verify using IVT, and the emissions that will actually be reported at the facility level under these amendments. In light of the above, we are requiring in this final rule that chemical-specific emissions from leaks for each process be entered into IVT, along with certain inputs to emission equations, as part of the alternative verification approach.

Third, for clarity, we are adding an explicit requirement to report the generically identified process for which missing data are reported under 40 CFR 98.126(d). This is in addition to the revisions to 98.126(d) that were proposed in the Inputs Rule, which we are also finalizing in today's action. Because emissions from fluorinated gas production are monitored and calculated at the process level, identification of the process is within the subpart A requirement to report "each data element for which a missing data procedure was used according to the procedures of an applicable subpart" at 98.3(c)(8). However, to the extent there is any potential ambiguity, the addition clarifies the requirement to report the generically identified process.

Finally, we are not finalizing our proposal to enter the data elements in Equations L–20, L–23, and L–25 into IVT. These data elements, which are not required to be reported to EPA, were inadvertently included in the group of subpart L inputs to emission equations to be entered into IVT in the Proposed Inputs Rule. Equation L–20 is used to calculate emission factors from multiple individual emission factor measurements; Equation L–23 is used to calculate adjusted process-vent-specific emission factors in the event of a process change; and Equation L–25 is used to calculate emission calculation factors based on emissions calculated using chemical engineering principles or engineering assessments. These factors are required to be measured and calculated only once every ten years or

if there is a change to the process. The calculations used to develop the emission factors and emission calculation factors are important for ensuring that facilities have correctly complied with subpart L's requirements, but they are not essential for verifying emission calculations every year. Further, individual emission factor measurements are required to be included in the emissions test report under 40 CFR 98.124(c)(5), which is kept as a record under 40 CFR 127(d)(4). Similarly, emission factor calculations are required to be kept as records under 40 CFR 127(d)(5). For the reasons stated above, we are not finalizing the entry of the data elements in Equations L–20, L–23, and L–25 into IVT.

3. Summary of Comments and Responses on Proposed Amendments to Reporting Requirements

Comment: Three commenters supported the proposed replacement of chemical-specific reporting at the process level with two levels of more aggregated reporting. The commenters noted that grouping of classes of compounds will aid in protecting information about which they have disclosure concerns. Two of the commenters specifically agreed with the proposal that facilities be required to report emissions of fluorinated GHGs by chemical when emissions of that fluorinated GHG exceed 1,000 $mtCO_2e$ for the facility as a whole. An additional commenter noted that compound-specific reporting at the facility level is sufficient to support efforts to identify and resolve differences between "bottom-up" emission estimates based on inventory methods and "top-down" emission estimates based on changing atmospheric concentrations. Two commenters agreed that a facility producing only one fluorinated gas should report emissions only by fluorinated GHG group, unless the emissions consist of a major fluorinated GHG constituent of the fluorinated gas product and that product is sold or transferred to another facility.

One commenter objected to the proposal to replace some chemical-specific reporting with aggregate reporting. The commenter stated that the proposal to require less information and "generic, melded information"— instead of process-specific and/or chemical specific information—would undermine the EPA's mission to protect the health and safety of the American public and the environment and the public's ability to monitor the use of HFCs nationwide. The commenter asserted that the EPA's proposal would materially reduce the amount and

quality of information available to inform future policy and that the proposal would require significantly fewer facilities to submit data compared to the original rule. In several cases, the commenter referred to drawbacks that the EPA identified in the proposed rule for alternatives to the preferred approach. The commenter suggested that certain facilities that meet specified criteria could report their fluorinated GHG emissions in a less detailed manner. The commenter further suggested that one of these criteria could be whether or not the facility is producing a unique product as opposed to a widely produced HFC.

Response: As discussed above, we are finalizing the amendments to the reporting requirements as proposed. We agree with several of the commenters that the amendments will address disclosure concerns while allowing the EPA to collect the data necessary to inform the development of future GHG policies and programs. This includes data on the magnitudes (in CO_2e), GWPs, atmospheric lifetimes, and sources (vents or leaks) of emissions at the process level and data on the exact chemical identities and magnitudes of significant emissions (those that exceed the 1,000 $mtCO_2e$ threshold) at the facility level. As discussed in the preamble to the proposed rule, process-specific emissions information allows the EPA to identify processes with high potential for emission reductions as well as measures to achieve those reductions. Chemical-specific information allows the EPA, as well as the public and the international community, to better understand the atmospheric impacts of U.S. emissions, to compare U.S. emissions to atmospheric measurements, and, if inconsistencies between emissions and atmospheric measurements are found, to better understand the magnitudes and causes of those inconsistencies. We have concluded that the data that will be collected under this final rule will enable us to meet these objectives.

Contrary to the statements of one of the commenters, the amendments will generally continue to require reporting of process-specific as well as chemical-specific information. Under the final rule, facilities making more than one fluorinated gas product must report their process-specific emissions by fluorinated GHG group in CO_2e, and they must identify their processes by process type and subtype and a generic identifier that will remain the same from year to year. Together, these requirements will enable the EPA and the public to identify processes that are reducing emissions or that have

potential to reduce emissions significantly and/or cost-effectively (*e.g.,* because the emissions are large and/or belong to a fluorinated GHG group with a relatively high GWP). (The requirement to report the effective DE range applied to each process will further inform such analyses.) In addition, facilities making more than one fluorinated gas product are required to report their facility-level emissions of fluorinated GHGs by chemical when the emissions of that chemical exceed 1,000 mtCO$_2$e. This will enable the EPA to identify fluorinated GHGs (including individual HFCs) with high emissions and to compare emissions to atmospheric measurements.

Facilities making only one fluorinated gas product are required to report their facility-wide emissions by fluorinated GHG group in CO$_2$e, except they must report the emissions by fluorinated GHG when that fluorinated GHG is a major fluorinated GHG constituent of a fluorinated gas product and the fluorinated gas product is sold or otherwise transferred to another person. For facilities making only one fluorinated gas product, the facility emissions are likely to result from relatively few processes (and possibly only one), meaning that even in this case, the reported emissions are likely to be close to process-specific emissions. (We believe that only one or two facilities are likely to make only one fluorinated gas product, which includes intermediates that are fluorinated gases.)

Also contrary to the statements of one of the commenters, these amendments will not require fewer facilities to submit data. The amendments do not affect the applicability of subpart L; all facilities that have reported to date and that would have reported under the 2010 Subpart L final rule if unchanged going forward will report under these amendments.

Because we have concluded that the data to be collected under this rule are sufficient to inform the development of future GHG policies and programs with respect to emissions from the production of all fluorinated gases, we are not pursuing an approach that would impose different reporting requirements for facilities or processes that produce ''unique'' vs. ''commonly made'' fluorinated gases. In addition to being unnecessary, that approach would require the development and application of criteria to determine which products or processes are ''unique,'' which would impose an administrative burden both on the Agency and on the regulated community, and which would likely further delay process- and chemical-

specific reporting from fluorinated gas producers. One of the challenges of developing and applying such criteria would be that unique processes are sometimes used to produce even commonly made fluorinated GHGs, including commonly made HFCs.

We agree with one of the commenters that several of the alternatives to the approach being finalized in today's rule, such as not distinguishing between transformation processes that do and do not transform fluorinated GHGs produced at another facility, would have reduced the usefulness of the data reported to the EPA. We did not receive any comments supporting these alternatives and we are not adopting them in today's final rule.

Comment: Two commenters stated that they did not anticipate that there would be export control limitations in complying with the proposed reporting requirements. However, they stated that in future reporting years, facilities would be obligated to comply with export control requirements in the event that any portion of the information reported was subject to export control regulations. One of these commenters suggested that the EPA either ''use its enforcement discretion and determine appropriately that the company could not comply with the GHGRP requirements'' or provide a ''CBI Petition Process'' to ''address those very infrequent occasions where confidentiality/export control issues are a concern and could not have been reasonably anticipated at the time of comment on the rule.'' The other commenter suggested that the EPA provide exemptions for export control information where confidentiality issues were not reasonably understood at the time of rule promulgation.

Response: We are not establishing a petition or exemption process under which a subpart L reporter could withhold reporting on the theory that reporting would disclose sensitive information. Based on the record for this rulemaking, including several years of discussion with the industry, extensive analysis by the EPA, and the comments submitted on the proposed rule, we believe that the amendments to the subpart L reporting requirements being promulgated today adequately address the disclosure concerns raised by the industry. We expect that the likelihood that an unanticipated disclosure concern would arise is quite low, and we have concluded that this possibility does not warrant the administrative burden associated with the development of a petition process. Moreover, due to the detailed information required to be reported, a petition process could cause

long delays, and potential confusion, in the release of non-confidential data. Should a disclosure concern arise, we encourage reporters to bring it to our attention expeditiously so that we can consider it.

Comment: Two commenters supported the proposed threshold of 1,000 mtCO$_2$e at the facility level for reporting emissions by chemical rather than by chemical group. Both commenters noted that this would reduce the number of speciated fluorinated GHGs that would be identified, thereby reducing the chemical-specific information potentially available to competitors. One commenter stated that, from a verification perspective, it would make sense to set the threshold as a percentage of total national production of the compound or of facility-wide emissions.

One commenter agreed that a threshold is ''one way that true CBI concerns could be addressed'' and that the threshold should be set in CO$_2$e; however, the commenter considered 1,000 mtCO$_2$e to be too high and asserted that the proposed regulations and comments provided no basis for this threshold. The commenter stated facilities that would like to protect disclosure of confidential catalysts or additives should provide an argument based on actual production practices that justify such a high threshold, and suggested that a threshold of 100 mtCO$_2$e may be protective.

Response: We are finalizing the 1,000 mtCO$_2$e threshold for chemical-specific reporting as proposed. As noted in the proposed rule, we proposed the 1,000 mtCO$_2$e threshold based on information from a fluorinated gas producer indicating that the vast majority of its CO$_2$e emissions consist of fluorinated GHGs that are emitted in quantities of one ton or more from the facility as a whole. Using a GWP of 1,000, which is relatively low for fluorinated GHGs in general, this equates to 1,000 mtCO$_2$e. (Note that using a higher GWP would result in a higher CO$_2$e threshold (*e.g.,* 10,000 mtCO$_2$e for fluorinated GHGs that have a GWP of 10,000).) The producer also noted that the fluorinated GHGs that are emitted in quantities of one ton or more make up a small fraction of the number of individual fluorinated GHGs emitted. Thus, setting the threshold for chemical-specific reporting at 1,000 mtCO$_2$e is expected to result in the reporting of the majority of CO$_2$e emissions in chemical-specific terms, while avoiding the disclosure of detailed process information.

We agree with two of the commenters that it is important to consider the

relationship between the threshold and typical facility-wide and nationwide emissions. Because the reporting under subpart L to date has been only in terms of CO_2e rather than by chemical, we do not yet know the exact percentage of each facility's emissions that will be reported in chemical-specific terms. However, we do know that the average fluorinated GHG emissions reported under subpart L by each facility can be large: about 415,000 mtCO_2e per facility with a national total of 6.6 million mtCO_2e in 2012. The 1,000-mtCO_2e threshold comprises 0.2 percent of this average. If 10 fluorinated GHGs were emitted below the threshold level, emissions of these fluorinated GHGs would make up less than 2 percent of the average, and even emissions of 50 fluorinated GHGs below the threshold would make up less than 10 percent of the average. While some facilities have emissions that are higher or lower than the average, implying that the percentage of emissions that will be reported in chemical-specific terms could be higher or lower than average at those facilities, we have concluded that this variability is reasonable given the varying environmental impacts of the emissions from those facilities. A single numerical threshold is also simpler to implement than a threshold expressed as a fraction of facility emissions. Thus, we are adopting the former rather than the latter. Although we have concluded that setting this threshold equal to 1,000 mtCO_2e is reasonable based on the information available to us at this time, we may reevaluate this threshold if we find that a large share of national emissions are not being reported in chemical-specific terms at the facility level once reporting begins under these amendments.

Comment: One commenter stated the proposed ranges for effective reporting DE were sufficient for the purposes of the GHGRP. The commenter did, however, question whether that information will be more useful to the EPA than simply requiring an indication regarding whether each process is controlled. The commenter pointed out that destruction efficiencies alone are not indicative of the effectiveness of a control device.

Response: We are finalizing the calculation method and ranges for the effective DE as proposed. We agree with the commenter that destruction efficiencies alone do not fully characterize the effectiveness of control devices in reducing emissions. This is why the calculation of the effective DE takes into consideration the downtime of the destruction device. As discussed in the preamble to the proposed rule,

downtime can significantly increase emissions. The requirement to calculate and specify a range for the effective DE therefore provides significantly more information than simply reporting the unweighted DE or indicating whether or not a process is controlled by a destruction device.

Comment: One commenter stated that reporting the effective DE for processes >10,000 mtCO_2e will greatly benefit the effectiveness of the reporting program and enhance data reliability. The commenter noted that the operation of destruction technology is a key element of best practices. The commenter stated there is no significant burden for facilities to report both the DE and the downtime and opined that destruction device downtime cannot be considered CBI and should be disclosed. The commenter suggested that facilities also report whether they have in-line destruction equipment or whether they collect and transport HFCs to a central destruction facility.

Response: We agree that reporting the effective DE, which accounts for both the DE and the downtime of destruction devices, will significantly enhance the value of the data (particularly process-level data) collected under subpart L. In the proposed subpart L amendments, the EPA proposed to report the effective destruction efficiency as a range. In support, the EPA noted in that proposal that in the memorandum entitled ''Evaluation of Competitive Harm From Disclosure of 'Inputs to Equations,' '' we found that reporting the precise DE under subpart L posed disclosure concerns because the DE provides data that could be used with certain other data to calculate the production rate and/or process efficiency (cost to do business) (78 FR 69348).[18] Specifically, the DE could be used with other data to calculate the production rate or the amount of fluorinated GHG in a destroyed stream removed from the process and sent to a destruction device. This finding, which was unchanged in the Final Inputs Rule, applies even more to the combination of DE and downtime, which, as noted by the commenter, provides a more accurate measure of the extent to which emissions are being reduced than DE alone. In addition, the EPA explained in the proposed subpart L amendments that reporting the effective DE as a range will capture the impacts of destruction efficiencies and downtimes while avoiding the

disclosure of detailed process information (78 FR 69349). The commenter generally asserts that the destruction device downtime cannot be considered CBI but provides no supporting rationale or information. The commenter also expresses no disagreement with EPA's assertion that reporting the effective destruction efficiency as a range will capture the impacts of destruction efficiencies and downtimes. We are therefore finalizing the reporting of the effective destruction efficiency as a range, as proposed. Regarding the comment that sources should report whether they have in-line destruction equipment or whether they collect and transport HFCs to a central destruction facility, the requirement that facilities report their effective destruction efficiency for each process will capture any variability in the uptime or overall destruction efficiency associated with the use of different configurations of destruction devices at the facility. As a result, this specific information is not needed.

Comment: One commenter stated that the chemical specific emissions in 98.126(a)(6) (regarding venting of residual fluorinated GHGs from returned containers) should be reported as part of the facility-wide totals required in 98.122(d). The commenter indicated it is not clear whether chemical-specific emissions reported under 40 CFR 98.126(d)(6)(ii) would impact the confidentiality issues that the EPA is addressing for subpart OO. The commenter stated that container heel venting for materials ''returned from the field'' would provide information on a specific product that may be CBI under subpart OO. (In a follow-up conversation with the EPA, the commenter clarified that this information was the chemical identity of the product.)[19]

Response: As noted in Section II.A.2 of this preamble, the proposed reporting requirement at 40 CFR 98.126(a)(6)(ii), which would require reporting of the mass of each fluorinated GHG that is emitted from returned containers, inadvertently repeated the current reporting requirement at 40 CFR 98.126(h)(1), and we are therefore not finalizing 40 CFR 98.126(a)(6)(ii) in this final rule.

As discussed in the preamble to the Proposed Amendments to Subpart L (78 FR 69350), we did not propose to remove 40 CFR 98.126(h)(1) because commenters on previous actions did not identify the requirement to report chemical-specific emissions of container

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[18] August, 2013, available in Docket EPA–HQ–OAR–2010–0929. This finding was reiterated in the memorandum entitled ''Final Evaluation of Competitive Harm From Disclosure of 'Inputs to Equations' '' Data Elements Deferred to March 31, 2015, September, 2014.

[19] See docket EPA–HQ–OAR–2009–0927 for additional information.

heels as one of the reporting requirements that pose disclosure concerns, and we did not believe that the requirement posed such concerns. As we explained in the proposal, container heels consist of the residual fluorinated GHGs that remain in containers returned to gas manufacturers by their customers. If the fluorinated GHG has been sold or otherwise distributed to a customer, its identity can be ascertained by a person other than the fluorinated gas manufacturer, including a competitor. This is the same principle that we used to support our proposal to require reporting of emissions of the fluorinated GHG product by facilities that make one product and sell or otherwise distribute it to another person. Thus, we are not removing the requirement at 40 CFR 98.126(h)(1) to report the masses of residual fluorinated GHGs vented from containers.

We do not believe that the subpart L requirement for fluorinated GHG producers to report the mass of each fluorinated GHG that is emitted from returned containers impacts confidentiality determinations for fluorinated GHG producers under subpart OO, which applies to suppliers of industrial GHGs. Under subpart OO, we determined that the mass of the fluorinated GHG product produced and reported is CBI. We did not address whether the identity of the fluorinated GHG product produced and reported was CBI.

4. Summary of Comments on Amendments to Subpart L Inputs Proposed in the Proposed Inputs Rule

Comment: One commenter stated that withdrawing the requirements to report the mass and quantity of production of gases and the DE does not protect a valid CBI concern and is a great disservice to the public. The commenter specifically identified the following paragraphs as areas of concern: 40 CFR 98.126(b)(5) through (b)(9), (f)(1), (g)(1), and (h)(2). The commenter argued that the amounts of gases produced and the destruction efficiencies would not disclose the methodologies for making those substances or protect appropriate CBI concerns ''anymore than a farmer not disclosing the amount of corn grown on a hectare of land would protect CBI.'' According to the commenter, a review of the DE helps evaluate the efficiency of different technologies, whether companies are optimizing the equipment and whether different collection techniques such as collection and destruction at a central facility are as effective as an in-line destruction technology. The commenter concluded

that the EPA should withdraw these proposed changes as the needs of public transparency outweigh any alleged CBI concern.

Response: The commenter specifically objects to the removal of reporting requirements in 40 CFR 98.126(b)(5)–(9), (f)(1), (g)(1), and (h)(2). The EPA has categorized these data elements as ''inputs to equations,'' except for those in 40 CFR 98.126(b)(5). As stated in the proposed rule deferring the requirement to report inputs to equations, ''For any inputs, the release of which EPA determines could result in the business harms alleged by commenters, EPA would evaluate whether emissions can be calculated or verified using additional methodologies, consistent with the transparency and accuracy goals of Part 98, without EPA collecting these inputs'' (75 FR 81355). We examined the data elements for which reporting was deferred to 2015, as described in the Proposed Inputs Rule (78 FR 55994). Our evaluation involved a four-step process. The results of this evaluation were documented in the four following memoranda available in the EPA's Docket ID No. EPA–HQ–OAR–2010–0929:

• ''Evaluation of Public Availability of Inputs to Emission Equations for which Reporting was Deferred to March 31, 2015,'' August 2013.

• ''Evaluation of Competitive Harm from Disclosure of 'Inputs to Equations' Data Elements Deferred to March 31, 2015,'' August 2013.

• ''Evaluation of Alternative Calculation Methods,'' August 2013.

• ''Evaluation of Alternative Verification Approaches For Greenhouse Gas Reporting Rule Subparts for which Reporting of Inputs to Emission Equations was Deferred to March 31, 2015,'' August 2013.

Based on the results of the first and second steps of the evaluation (evaluation of public availability and competitive harm), the EPA identified disclosure concerns associated with the subpart L inputs to equations reporting elements mentioned by the commenter.

The EPA determined in its memorandum ''Evaluation of Competitive Harm from Disclosure of 'Inputs to Equations' Data Elements Deferred to March 31, 2015,'' August 2013 (refer to Docket ID No. EPA–HQ–OAR–2010–0929) that the following inputs to emission equations provide production or raw material data that could cause competitive harm if released: The mass of each fluorine-containing reactant that is fed into the process (40 CFR 98.126(b)(6)); the mass of each fluorine-containing product produced by the process (40 CFR

98.126(b)(7)); the mass of each fluorine-containing product, by-product, and reactant that are removed from the process and fed into the destruction device (40 CFR 98.126(b)(8)(i)–(iii)); the mass of each fluorine-containing by-product that is removed from the process and recaptured (40 CFR 98.126(b)(8)(iv)); the mass of fluorine in each stream that is fed into the destruction device (40 CFR 98.126(b)(9)(i)); the mass of fluorine that is recaptured (40 CFR 98.126(b)(9)(ii)); and the mass of the fluorinated GHG fed into the destruction device (40 CFR 98.126(g)(1)). The competitive harm evaluation further explains that the demonstrated DE of the destruction device for each fluorinated GHG fed into the device from the process (40 CFR 98.126(b)(8)(v)), the weighted average DE of the destruction device calculated for each stream (40 CFR 98.126(b)(9)(iii)), and the DE of each destruction device for each fluorinated GHG whose destruction the facility reflects in 40 CFR 98.123 (40 CFR 98.126(f)(1) provide data that could be used to calculate the amount of fluorinated GHG in a waste stream removed from the process and sent to a destruction device. Competitors could deduce the amount of fluorinated GHG sent to a destruction device if the annual emissions of each fluorinated GHG (as required to be reported under 40 CFR 98.126(a)(2)) are known and if it could be deduced that the emissions consist exclusively of post-destruction device emissions (information that a competitor knowledgeable of some aspects of the facility and/or of fluorine chemistry might deduce).

We proposed that these inputs to equations would be entered into IVT instead of being reported to the EPA. The commenter asserted that the amounts of gases produced and the destruction efficiencies would not disclose the methodologies for making those substances; however, it is not the potential disclosure of production methods that is of concern for these data elements, but the ability to calculate production and process efficiency from the release of these data. As discussed in the proposed competitive harm evaluation and reiterated in final competitive harm memorandum (which was unchanged from the proposed memo for subpart L), disclosing a facility's production or throughput data would be detrimental to a firm's competitiveness by revealing confidential process information and operational and marketing strategies, and disclosing process performance and operation information could be

detrimental to a firm's competitiveness by revealing process efficiency, providing insight into a firm's operational strengths and weaknesses. As a result, our finding that disclosure of these inputs to equation would be detrimental to a firm's competitiveness still stands. Refer to the memorandum ''Final Evaluation of Competitive Harm from Disclosure of ''Inputs to Equations'' Data Elements Deferred to March 31, 2015'' September 2014 (refer to Docket ID No. EPA–HQ–OAR–2010–0929) for additional details on this finding. We are therefore finalizing as proposed, with the exception being that the inputs to equation in 40 CFR 98.126(b) will not be entered into IVT. These inputs are specific to the mass balance method, which is being removed in this action. As a result, since the use of IVT will start for reporting year 2015 for subpart L, the mass balance method will no longer be a method in subpart L. As discussed earlier in this section of the preamble, we are also requiring the effective DE to be reported as a range, which will capture the impacts of destruction efficiencies and downtimes while avoiding the disclosure of detailed process information.

Finally, for the heel factor calculated for each container size and type (40 CFR 98.126(h)(2)), the EPA determined in the harm evaluation that these data could be used to calculate the number of tanks processed if the emissions from each type of container (as required to be reported in 40 CFR 98.126(h)(1)) are also known. (The confidentiality determination for the emissions from each type of container as required to be reported in 40 CFR 98.126(h)(1) is being finalized in this action as emission data.) The number of each type of tank processed and the size of the tanks could provide insight into product sales. Again, the commenter did not provide any rationale for reversing these findings beyond asserting that the mass and amount of gases produced and the destruction efficiency rates will not disclose the methodologies for making the substances. As a result, our finding that the heel factor could provide insight into product sales still stands, and we are finalizing as proposed that this input to equation be entered into IVT rather than reported to the EPA.

With respect to the mass of F–GHG by-product emitted from the process (40 CFR 98.126(b)(5)), this data element is not an input to an equation and was therefore not included in the Proposed Inputs rule. It was, however, part of the Proposed Amendments to Subpart L. As discussed in the Proposed Amendments to Subpart L, the data element may

reveal detailed process information. The EPA proposed to delete this reporting element as part of its removal of the mass balance method, and the EPA is finalizing the removal of this method in this action.

5. Fluorinated GHG Groups

a. Summary of Fluorinated GHG Groups

We are establishing 12 fluorinated GHG groups into which subpart L facilities will sort emissions for reporting at the process level. These groups are the same as those established for purposes of developing and assigning the default GWPs being added to Table A–1, discussed in Section II.B.

b. Changes Since the Proposed Amendments to Subpart L

We proposed to establish five fluorinated GHG groups for process-level reporting under subpart L: (1) Fully fluorinated GHGs and HTFs, (2) saturated HFCs, (3) saturated HFEs and saturated HCFEs, (4) unsaturated PFCs, unsaturated HFCs, unsaturated HCFCs, unsaturated HFEs, and fluorinated ketones, and (5) other fluorinated GHGs and HTFs. Commenters requested that we split the third group, expand the fourth group, and add two additional groups, fluorotelomer alcohols and fluorinated GHGs with carbon-iodine bonds, to increase the precision and accuracy of the default GWPs applied to the chemicals in these groups. One commenter stated that five types of compounds, including unsaturated fluorinated ethers, unsaturated halogenated esters, fluorinated aldehydes, fluorotelomer alcohols,[20] and fluorinated GHGs with carbon iodine bonds, would have been assigned GWPs that were too high if they had remained in the ''Other'' category. Another commenter stated that two types of saturated HFEs and HCFEs would have been assigned GWPs that were, on average, either too high (for partially segregated saturated HFEs and HCFEs) or too low (for non-segregated saturated HFEs and HCFEs).

We agreed with these comments and consequently included the suggested additional fluorinated GHG groups and

associated default GWPs in the Proposed Rule to Add GWPs. We also proposed that the group of unsaturated compounds include unsaturated fluorinated ethers, unsaturated halogenated esters, and fluorinated aldehydes. Following additional research and the receipt of comments on the Proposed Rule to Add GWPs, we decided to add four additional fluorinated GHG groups, as described in Section II.A.2. In addition to increasing the precision and accuracy of the default GWPs, these changes increase the precision of the subpart L process-level reporting that relies on these chemical groups. The analysis supporting the fluorinated GHG groups and associated default GWPs can be found in the memorandum entitled ''Analysis of Fluorinated Greenhouse Gas Groups and Associated Default GWPs (Revised, November 2014)'' in Docket number EPA–HQ–OAR–2009–0927.

c. Comments Received on the Proposed Amendments to Subpart L Regarding Fluorinated GHG Groups and Responses

Comment: Three commenters supported the establishment of fluorinated GHG groups based on chemical type for purposes of aggregating process-level emissions and setting default GWPs, although each commenter suggested revisions to the proposed groups.

Response: We agree that establishing fluorinated GHG groups and GWPs based on chemical type helps to ensure that the groupings and default GWPs convey accurate and precise information about the atmospheric impacts of the fluorinated GHGs that fall into the groups. The comments and responses regarding suggested changes to the proposed fluorinated GHG groups are discussed in Section II.B.5.b of this preamble and in the response to comments document for this rule in Docket number EPA–HQ–OAR–2009–0927.

Comment: Three commenters supported adding chemical-specific GWPs to Table A–1 when those values were established by an internationally recognized scientific body, peer-reviewed, or supported by adequate technical demonstrations.

Response: As discussed above, the EPA is amending Table A–1 to add 98 chemical-specific GWPs, which are primarily drawn from the IPCC AR5. A discussion of the EPA's criteria for including chemical-specific GWPs in Table A–1 can be found in the Proposed Rule to Add GWPs (79 FR 44332). As noted above, the new chemical-specific GWPs in Table A–1 will be applied to

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[20] At one point in its comment, the commenter recommended establishing a separate group for fluorinated alcohols generally, which is a larger set than fluorotelomer alcohols, with an average GWP of approximately 25 (including fluorotelomer alcohols) or 30 (excluding fluorotelomer alcohols). Another commenter also recommended establishing a separate group to account for fluorinated GHGs with GWPs at or near a value of 10. As discussed in Section II.A of this preamble, we are establishing a separate fluorinated GHG group that has a default GWP of 30 and that includes, among other types of compounds, fluorinated alcohols other than fluorotelomer alcohols.

the fluorinated GHGs reported under subpart L, as appropriate, as well as under other subparts.

Comment: One commenter continued to believe that the ''best estimate'' approach currently contained in the subpart L rule [98.126(j)(3)] as an interim reporting construct is the most appropriate method for determining GWPs when they are not listed in Table A–1. However, the commenter appreciated the EPA's need to provide a consistent method for all reporters and the F–GHG groupings included in the subpart L proposal are acceptable. Another commenter supported the establishment of consistent default GWPs and stated that the best-estimate GWP process setup in the temporary subpart L reporting changes [98.126(j)(3)] led to doubts about the accuracy, reliability, and comparability of the data.

Response: As discussed in the Proposed Amendments to Subpart L (78 FR 69348), we believe that the replacement of ''best-estimate'' GWPs with multiple default GWPs based on fluorinated GHG group is important to ensuring the long-term consistency, accuracy, reliability, and comparability of CO_2e emissions estimates for fluorinated gas producers.

Comment: One commenter requested confirmation that when Table A–1 contains a chemical-specific GWP for a fluorinated GHG, that value will be used to calculate and report emissions, and that default values will be used only when chemical-specific values are not available. Emissions from each fluorinated GHG group would include compounds whose GWPs could be either chemical-specific or default values.

Response: The commenter is correct in this interpretation. To make this clear, we are finalizing the revisions to the definition of ''global warming potential'' that we proposed in the Proposed Rule to Add GWPs. This revision states that the chemical-specific GWPs in Table A–1 are required to be applied to GHGs that have chemical-specific GWPs listed in Table A–1, while the default GWPs in Table A–1 are required to be applied to fluorinated GHGs that do not have chemical-specific GWPs listed in Table A–1. This is the case even when emissions of the fluorinated GHGs are reported in terms of CO_2e by fluorinated GHG group. This will help to ensure that chemical-specific and default GWPs are applied correctly and consistently in CO_2e calculations for subpart L and across Part 98.

Comment: Two commenters stated that it is their understanding that the introduction of the new default GWPs would not affect threshold evaluations that have already been conducted under subpart L (*i.e.,* preliminary engineering estimates used to ascertain whether emissions testing is required). With the revised GWPs, one commenter noted it is possible that changes would occur in the calculations that are made under 40 CFR 98.123(c)(1) or (2) and that calculated emissions could increase above the 10,000 $mtCO_2e$ per year reporting threshold. The other commenter stated their understanding is that this would only be required for new processes or process changes. One commenter requested that the EPA clearly state that additional testing would not be required until some other process change required this to be completed.

Response: Fluorinated gas producers are not required to re-perform the preliminary calculations for each process vent emitting fluorinated GHGs whose GWPs are increasing under this rule. However, those preliminary calculations and the calculations performed for purposes of annual reporting are distinct. If the emissions that facilities calculate from a vent for purposes of annual reporting exceed the 10,000-metric-ton-CO_2e threshold based on the updated GWPs, they must perform emission testing on that vent during the following year. This is required by the current provisions of subpart L.

40 CFR 98.123(c)(2)(i) states: ''If the calculations under paragraph (c)(1) of this section, as well as any subsequent measurements and calculations under this subpart, indicate that the continuous process vent has fluorinated GHG emissions of less than 10,000 metric ton CO_2e per year, summed across all operating scenarios, then you may comply with either paragraph (c)(3) of this section (Emission Factor approach) or paragraph (c)(4) of this section (Emission Calculation Factor approach).'' 40 CFR 98.123(c)(2)(ii) states ''If the continuous process vent does not meet the criteria in paragraph (c)(2)(i) of this section then you must comply with the emission factor method specified in paragraph (c)(3) (Emission Factor Approach) of this section.''

In the monitoring provisions of subpart L, 40 CFR 98.124(c)(8) further states: ''If a continuous process vent with fluorinated GHG emissions less than 10,000 metric tons CO_2e, per 40 CFR 98.123(c)(2), is later found to have fluorinated GHG emissions of 10,000 metric tons CO_2e or greater, you must conduct the emission testing for the process vent during the following year and develop the process-vent-specific emission factor from the emissions testing.''

Together, these paragraphs require fluorinated gas production facilities to conduct emissions testing on continuous process vents whose emissions are calculated to exceed 10,000 metric tons of CO_2e per year either under the preliminary calculations of 40 CFR 98.123(c)(1) or under subsequent measurements and calculations, particularly the measurements and calculations used to estimate emissions from the vent for every annual report. This testing must be performed in the following year and reflected in the report for that year. Thus, if a fluorinated gas production facility found that a vent exceeded the threshold in 2014, the facility would be required to perform testing by February 28, 2016 to develop an emission factor to report the 2015 emissions from that vent.

Comment: Two commenters requested clarification that subpart L facilities would not be required to re-perform any assessments that were performed in previous years, such as the calculation of the relative standard deviation of the emission factors measured to develop a process-vent-specific emission factor, and the calculation of differences among the emission calculation factors for different operating scenarios implemented in previous years.

Response: Subpart L facilities are not required to recalculate either the relative standard deviation of the emission factors measured to develop a process-vent-specific emission factor, or the differences among the emission calculation factors for different operating scenarios implemented in previous years. However, in future calculations, they are required to use the GWPs in effect at the time of the calculation.

Comment: Two commenters requested confirmation that, for purposes of comparing the emission calculation factors for different operating scenarios of the same process, they should use the same GWPs in both factors.

Response: Under subpart L, facilities that plan a change to an operating scenario whose emission factor was measured must estimate and compare the emission calculation factors for the measured and changed scenarios. If the difference exceeds 15 percent, then the facility must re-test (40 CFR 98.124(c)(7)(ii)).

For purposes of these and similar calculations, facilities should use, for both the original and the updated parameters, the GWPs that are in the version of Table A–1 in effect at the time of the calculation. This will avoid

the introduction of differences that are caused by differences in GWPs rather than by changes to production processes.

C. Removal of the Mass-Balance Method From Subpart L

As proposed, we are removing the option to use a mass-balance method from the calculation and monitoring requirements of the rule. No facilities have used this method since RY 2011. We received no negative comments regarding the proposed removal. However, one commenter requested that the EPA include the mass-balance provisions in an appendix to Part 98 for future reference (*e.g.,* in amending past reports) rather than referencing the **Federal Register** document that included the 2010 Subpart L Rule. We are including the mass-balance provisions in an appendix to subpart L because we are requiring full reporting in 2015 of emissions that may have been measured using the mass balance method during the 2011 reporting year. With the removal of the mass-balance method, facilities will still be able to use the emission factor and emission calculation factor approaches to monitor, calculate, and report their fluorinated GHG emissions.

D. Clarification of the Subpart L Emission Factor Method

1. Summary of Clarification of the Emission Factor Method

The EPA is finalizing part of the proposed revision to the emission testing requirement at 40 CFR 98.124(c)(1). For process vents for which facilities performed scoping speciations, facilities will be required to include in the emissions test "any fluorinated GHG that was identified in the initial scoping speciation" rather than "any fluorinated greenhouse gas that occurs in more than trace concentrations in the vent stream or, where a destruction device is used, in the inlet to the destruction device." For process vents for which facilities did not perform scoping speciations, facilities will continue to be required to include "any fluorinated greenhouse gas that occurs in more than trace concentrations in the vent stream or, where a destruction device is used, in the inlet to the destruction device." As noted in the proposed rule, a primary purpose of the scoping speciation was to identify fluorinated GHGs to measure in subsequent emissions testing for the development of emission factors, and this change ensures that the scoping speciation serves that purpose. The set of fluorinated GHGs identified in the

scoping speciation is expected to be broader than the set of fluorinated GHGs that occurs in more than trace concentrations in vent streams because the scoping speciation requires the identification of fluorinated GHGs that occur in more than trace concentration in any stream, including process streams as well as vent streams.

As noted in the proposed rule, this requirement will be applied to future testing, but not to past testing.

2. Changes Since the Proposed Rule

The proposed rule would also have required facilities to test for compounds that were "otherwise known to occur in the vent stream." We are not finalizing this requirement after several commenters expressed concerns that it would require facilities to develop costly new protocols for fluorinated GHGs that are emitted at very low levels and that would fall below the detection limit in many cases. The commenters stated that the resulting testing would reveal "little if any additional emissions information" and would have only "minor impact on the estimated total quantity of CO$_2$e emitted nationwide." To avoid the possibility of imposing large costs in order to quantify very small emissions of fluorinated GHGs, we are following the commenters' recommendations.

However, we plan to continue to evaluate the significance of and feasibility of measuring emissions of fluorinated GHGs that are known to occur in processes below trace concentrations. Based on our experience establishing stack testing requirements for another industry, fluorinated GHGs emitted from some types of facilities can be detected at concentrations below 20 parts per billion, approximately 50,000 times lower than 0.1 percent, the Part 98 definition of "trace concentration." In addition, emissions of trace concentrations of fluorinated GHGs at flow rates typical of these types of facilities would be very high. Nevertheless, we are aware that the conditions under which fluorinated GHGs are emitted from fluorinated gas production facilities (*e.g.,* diluents and flow rates) may be significantly different from those of other facilities, indicating that more research is needed.

In addition to potentially expanding the set of fluorinated GHGs that must be tested for in processes for which facilities perform scoping speciations, the "otherwise known to occur" language would have covered situations in which a process vent exceeded the 10,000-mtCO$_2$e threshold for emission testing but did not exceed the one-metric-ton-of-fluorinated-GHGs

threshold for the scoping speciation. This situation is expected to be rare, but could occur if the fluorinated GHGs emitted had very high GWPs (*i.e.,* over 10,000). To continue to cover this situation, we are retaining the requirement to test for "any fluorinated greenhouse gas that occurs in more than trace concentrations in the vent stream or, where a destruction device is used, in the inlet to the destruction device" for processes for which facilities did not perform scoping speciations.

III. Overview and Approach to Final CBI Determinations

A. Final Confidentiality Determinations for New, Revised, and Unchanged Data Elements

In this action, the EPA is finalizing both the confidentiality determinations that were included in the Proposed Amendments to Subpart L (for the new and substantially revised data elements) and many of the confidentiality determinations that were included in the 2012 Proposed Confidentiality Determinations (for the subpart L data elements that are not being removed or substantially revised). We received only supportive comments on the proposed confidentiality determinations for the new and substantially revised data elements, and are finalizing the confidentiality determinations as proposed for all 15 of those data elements. We received multiple comments on the January 10, 2012 proposed confidentiality determinations for a number of existing subpart L data elements, and we have addressed these comments through the revisions to the subpart L reporting requirements being finalized in today's action. For a list of these comments please see the comment response document in Docket number EPA–HQ–OAR–2009–0927. We are not finalizing determinations for reporting requirements associated with the use of Best Available Monitoring Methods (BAMM) under subpart L. Unlike the other data elements required to be reported under subpart L, BAMM data elements were reported only for reporting years 2011 and 2012 because the option to use BAMM expired in reporting year 2012 . In light of the above, we do not see a need to establish in this rulemaking the confidentiality status of the suite of BAMM data elements (approximately 60). In the event that we receive a request to release this information, depending on the nature and extent of the request, we will make such determinations either case-by-case or, if appropriate, by finalizing the CBI determinations in a separate rulemaking. Other than the

reporting requirements associated with BAMM, there are 14 existing subpart L data elements for which we received no comment on the proposed confidentiality determinations; we are finalizing the confidentiality determinations as proposed for 10 of these data elements. For the other four data elements, we have decided not to make a final confidentiality determination, as discussed below. We are also finalizing a confidentiality determination for a data element added since proposal.

To make the confidentiality determinations, the EPA used the same approach that we previously used for the 2011 final CBI rule (76 FR 30782, May 26, 2011). Specifically, for the 25 data elements (15 new and substantially revised data elements and 10 existing data elements), the confidentiality status of which we are finalizing today, the EPA had proposed to assign each of these data elements to one of 11 direct emitter data categories,[21] based on the type and characteristics of the data elements. For a description of each data category and the type and characteristics of data elements assigned to each category, see Sections II.C and II.D of the July 7, 2010 CBI proposal

preamble (75 FR 39106–39130). Based on its evaluation of these 25 data elements, the EPA proposed to assign each data element to one of the following direct emitter data categories:
• Emissions.
• Calculation Methodology and Methodological Tier.
• Data Elements Reported for Periods of Missing Data that are Not Inputs to Emission Equations.
• Facility and Unit Identifier Information.
• Unit/Process "Static" Characteristics that are Not Inputs to Emission Equations.
• Unit/Process Operating Characteristics that are Not Inputs to Emission Equations.
• Test and Calibration Methods.

In the 2011 final CBI rule (76 FR 30782, May 26, 2011), the EPA made categorical determinations that all data elements assigned to the "Emissions," "Calculation Methodology and Methodological Tier," "Facility and Unit Identifier Information," and "Data Elements Reported for Periods of Missing Data that are Not Inputs to Emission Equations" data categories meet the definition of "emission data" in 40 CFR 2.301(a)(2)(i) and, thus, are not entitled to confidential treatment. In

addition, the EPA determined that all data elements assigned to the "Test and Calibration Methods" data category were not CBI. The EPA had proposed to assign 21 of the 25 data elements to one of the above-mentioned data categories and to apply to these data elements the categorical confidentiality determinations of their assigned categories. The EPA is therefore finalizing the category assignment and application of the categorical determinations as proposed for these 21 data elements. As shown in Table 4A of this preamble, 10 data elements are assigned to the "Emissions" data category, four data elements are assigned to the "Calculation Methodology and Methodological Tier" category, five data elements are assigned to the "Data Elements Reported for Periods of Missing Data that are Not Inputs to Emission Equations" data category, one data element is assigned to the "Facility and Unit Identifier Information" data category, and one data element to the "Test and Calibration Methods" category. Each of these 21 data elements is subject to the categorical confidentiality determination for the data category to which it is assigned.

TABLE 4A—DATA ELEMENTS ASSIGNED TO THE "EMISSIONS," "CALCULATION METHODOLOGY AND METHODOLOGICAL TIER," "FACILITY AND UNIT IDENTIFIER INFORMATION," "TEST AND CALIBRATION METHODS," AND "DATA ELEMENTS REPORTED FOR PERIODS OF MISSING DATA THAT ARE NOT INPUTS TO EMISSION EQUATIONS" DATA CATEGORIES

Citation	Data element
"Emissions" Data Category (determined to be emission data)	
40 CFR 98.126(a)(3)	For facilities with more than one fluorinated gas product: for each generically-identified production or transformation process and each fluorinated GHG group, total GWP-weighted emissions of all fluorinated GHGs in that group emitted from the process, in metric tons CO_2e.
40 CFR 98.126(a)(4)(i)	For facilities with more than one fluorinated gas product: for each fluorinated GHG with emissions of 1,000 metric tons of CO_2e or more from production and transformation processes, summed across the facility as a whole, the total mass in metric tons of the fluorinated GHG emitted from production and transformation processes, summed across the facility as a whole.
40 CFR 98.126(a)(4)(ii)	For facilities with more than one fluorinated gas product: total GWP-weighted emissions of all other fluorinated GHGs from production and transformation processes by fluorinated GHG group for the facility as a whole, in metric tons of CO_2e.
40 CFR 98.126(a)(5)	For facilities that produce only one fluorinated gas product: aggregated total GWP-weighted emissions of fluorinated GHGs from production and transformation processes by fluorinated GHG group for the facility as a whole, in metric tons of CO_2e.
40 CFR 98.126(a)(5)	Where facilities produce only one fluorinated gas product but emissions from production and transformation processes consist of a major fluorinated GHG constituent of that fluorinated gas product, and the product is sold or transferred to another person: total mass in metric tons of each fluorinated GHG emitted from production and transformation processes that is a major fluorinated GHG constituent of the product.
40 CFR 98.126(c)(3)	For the emission factor and emission factor calculation method: for each process and each fluorinated GHG group, the total GWP-weighted mass of all fluorinated GHGs in that group emitted from all process vents combined, in metric tons of CO_2e.
40 CFR 98.126(c)(4)	For the emission factor and emission factor calculation method: for each process and each fluorinated GHG group, the total GWP-weighted mass of all fluorinated GHGs in that group emitted from equipment leaks, in metric tons of CO_2e.
40 CFR 98.126(e)	For each fluorinated gas production facility that destroys fluorinated GHGs, report the excess emissions that result from malfunctions of the destruction device.

[21] There are 11 data categories for direct emitter subparts. See 2011 final CBI rule (76 FR 30782, May 26, 2011). Subpart L is a direct emitter subpart.

TABLE 4A—DATA ELEMENTS ASSIGNED TO THE "EMISSIONS," "CALCULATION METHODOLOGY AND METHODOLOGICAL TIER," "FACILITY AND UNIT IDENTIFIER INFORMATION," "TEST AND CALIBRATION METHODS," AND "DATA ELEMENTS REPORTED FOR PERIODS OF MISSING DATA THAT ARE NOT INPUTS TO EMISSION EQUATIONS" DATA CATEGORIES— Continued

Citation	Data element
40 CFR 98.126(g)(2)	For each fluorinated gas production facility that destroys fluorinated GHGs, report the mass of each previously produced fluorinated GHG emitted from the destruction device (metric tons).
40 CFR 98.126(h)(1)	For each fluorinated gas production facility that vents residual fluorinated GHGs from containers, report, for each fluorinated GHG vented, the mass of the residual fluorinated GHG vented from containers annually (metric tons).
"Calculation Methodology and Methodological Tier" Data Category (determined to be emission data)	
40 CFR 98.126(a)(2)(iv)	For each generically identified fluorinated gas production and transformation process and each fluorinated GHG group at the facility: the methods used to determine the mass emissions of that fluorinated GHG group from that process from process vents.
40 CFR 98.126(a)(2)(v)	For each generically identified fluorinated gas production and transformation process and each fluorinated GHG group at the facility: the methods used to determine the mass emissions of that fluorinated GHG group from that process from equipment leaks, unless the mass balance method was used (for RYs 2011, 2012, 2013 and 2014 only).
40 CFR 98.126(b)(1)	For the mass-balance approach (for RYs 2011, 2012, 2013 and 2014 only): the overall absolute and relative errors calculated for the process under the former 40 CFR 98.123(b)(1), in tons and decimal fraction, respectively.
40 CFR 98.126(b)(2)	For the mass-balance approach (for RYs 2011, 2012, 2013 and 2014 only): the method used to estimate the total mass of fluorine in destroyed or recaptured streams (specify the former 40 CFR 98.123(b)(4) or (15)).
"Data Elements Reported for Periods of Missing Data That Are Not Inputs to Emission Equations" Data Category (determined to be emission data)	
40 CFR 98.126(d)(1)	Where missing data have been estimated pursuant to 40 CFR 98.125, the generically identified process for which the data were missing.
40 CFR 98.126(d)(2)	Where missing data have been estimated according to 40 CFR 98.125, the reason the data were missing.
40 CFR 98.126(d)(2)	Where missing data have been estimated according to 40 CFR 98.125, the length of time the data were missing.
40 CFR 98.126(d)(2)	Where missing data have been estimated according to 40 CFR 98.125, the method used to estimate the missing data.
40 CFR 98.126(d)(3)	Where missing data have been estimated according to 98.125, estimates of the missing data for all missing data associated with data elements required to be reported in this section.
"Facility and Unit Identifier Information" Data Category (determined to be emission data)	
40 CFR 98.126(a)(2)(i)	For each generically identified production and transformation process at the facility: a number, letter, or other identifier for the process. This identifier must be consistent from year to year.
"Test and Calibration Methods" Data Category (determined not to be CBI)	
40 CFR 98.126(f)(3)	For each fluorinated gas production facility that destroys fluorinated GHGs, the date of the most recent destruction device test.

In the Proposed Amendments to Subpart L, the EPA proposed to assign two new data elements to the "Unit/Process 'Static' Characteristics that are Not Inputs to Emission Equations" category and one new data element to the "Unit/Process Operating Characteristics that are Not Inputs to Emission Equations" category. In addition, the EPA had proposed to assign one existing data element to the "Unit/Process Operating Characteristics that are Not Inputs to Emission Equations" in the 2012 Proposed

Confidentiality Determinations. In the 2011 final CBI rule, the EPA determined that the data elements in these categories are not "emission data" (as defined at 40 CFR 2.301(a)(2)(i)). However, instead of categorical determinations, the EPA made confidentiality determinations for individual data elements assigned to these categories. In proposing these determinations, the EPA considered the confidentiality criteria at 40 CFR 2.208, in particular whether release of the data is likely to cause substantial harm to the

business's competitive position. See 40 CFR 2.208(e)(1). The EPA followed the same approach and proposed individual confidentiality determination for each of the four data elements assigned to these two data categories. The EPA received no comment on these proposed determinations and we are finalizing these determinations as proposed. Table 4B of this preamble identifies these four data elements along with their confidentiality determinations and the supporting rationales.

TABLE 4B—FINAL CONFIDENTIALITY DETERMINATIONS FOR NEW DATA ELEMENTS ASSIGNED TO THE "UNIT/PROCESS 'STATIC' CHARACTERISTICS THAT ARE NOT INPUTS TO EMISSION EQUATIONS" AND THE "UNIT/PROCESS OPERATING CHARACTERISTICS THAT ARE NOT INPUTS TO EMISSION EQUATIONS" DATA CATEGORIES

Citation	Data element	Confidentiality determination	Rationale for confidentiality determination
Unit/Process 'Static' Characteristics That Are Not Inputs to Emission Equations			
40 CFR 98.126(a)(2)(ii)	For each generically identified production and transformation process at the facility: indication of whether the process is a fluorinated gas production process, a fluorinated gas transformation process where no fluorinated GHG reactant is produced at another facility, or a fluorinated gas transformation process where one or more fluorinated GHG reactants are produced at another facility.	Not CBI	This data element would reveal only general information about the type of operation, which would not reveal any information about the production process (e.g., number of process steps, manufacturing efficiencies, novel productions methods) that would allow competitors to gain a competitive advantage.
40 CFR 98.126(a)(2)(iii)	For each generically-identified production and transformation process at the facility: Indication of whether the process could be characterized as reaction, distillation, or packaging (include all that apply).	Not CBI	This data element would reveal only a general description of the type of production process, which would not reveal any information about the process (e.g., number of process steps, manufacturing efficiencies, novel productions methods) that would allow competitors to gain a competitive advantage.
Unit/Process Operating Characteristics That Are Not Inputs to Emission Equations			
40 CFR 98.126(a)(6)	For each generically identified process, the range in Table L–2 that encompasses the effective DE, $DE_{effective}$, calculated for that process using Equation L–35, based on CO_2e.	Not CBI	This data element would place the effective DE for the process in a range. For any given level of emissions, this range would correspond to a range of masses vented to the destruction device that spanned a factor of four or more. Thus, even if competitors had a rough estimate of the quantity of the product produced (e.g., from sources other than the GHGRP), this information would not reveal any information about the process (e.g., manufacturing efficiencies) that would allow competitors to gain a competitive advantage.
40 CFR 98.126(f)(4)	For each fluorinated gas production facility that destroys fluorinated GHGs, the name of all applicable federal or state regulations that may apply to the destruction process.	Not CBI	This data element would not reveal any information about the process (e.g., manufacturing efficiencies) that would allow competitors to gain a competitive advantage.

The EPA has decided not to make a final determination for four existing data elements that remain unchanged in today's amendments:

• For each fluorinated gas production facility that destroys fluorinated GHGs, chemical identity of the F–GHG(s) used in the performance test conducted to determine DE, including surrogates (40 CFR 98.126(f)(2)).

• For each fluorinated gas production facility that destroys fluorinated GHGs, information on why the surrogate is sufficient to demonstrate the DE for each fluorinated GHG (40 CFR 98.126(f)(2)).

• For each fluorinated gas production facility that destroys fluorinated GHGs, submit a one-time report describing measurements, research, or analysis that relate to the formation of products of

incomplete combustion that are fluorinated GHGs during the destruction of fluorinated gases, including methods and results (40 CFR 98.126(i)).

• The report must include the methods and results of any measurement or modeling studies, including the products of incomplete combustion for which the exhaust stream was analyzed, as well as copies of relevant scientific papers, if available, or citations of the papers, if they are not (40 CFR 98.126(i)).

In the 2012 Proposed CBI Determinations, the EPA proposed that these four data elements are non-CBI. Although the EPA did not receive specific comments on these four proposed determinations, the EPA received comments that raised concerns

regarding the disclosure of the contents of process streams including information that could be revealed with the disclosure of these four data elements. The EPA concluded that the nature of the information submitted under these data elements could vary significantly among reporters and may include information related to the contents of process streams. For example, some reporters may submit information related to the contents of process streams as part of their demonstration of why the surrogate compound is sufficient to demonstrate the DE for each fluorinated GHG. However, the EPA anticipates that other facilities may submit information unrelated to the contents of process streams. In light of the above, the EPA

is not making final confidentiality determinations for these data elements. Any confidentiality status of these data elements will be evaluated on a case-by-case basis, in accordance with the existing CBI regulations in 40 CFR part 2, subpart B.

We are finalizing a confidentiality determination for the data reporting element that was added to 40 CFR 98.3(c)(4)(iii)(E) since proposal; as a result we did not propose a confidentiality determination for this data element. This data element specifies that if a fluorinated GHG does not have a chemical-specific GWP in Table A–1, then reporters must ''report the fluorinated GHG group of which that fluorinated GHG is a member'' This data reporting element clearly fits into the ''Calculation Methodology and Methodological Tier'' Data Category'' as it allows the EPA to determine whether the correct method was used, or specifically, whether an appropriate GWP was applied. Therefore, we are assigning it to this data category and applying the categorical determination for this category, which is emission data.

Lastly, we note that we have already established in a previous rulemaking the confidentiality status of the data element in 40 CFR 98.126(d) that is included in today's final rule. As explained in Section II.B.2.b of this preamble, this data element is among the data already required to be reported under subpart A, 40 CFR 98.3(c)(8), but that we are now requiring its reporting explicitly under subpart L 40 CFR 98.126(d) for clarity. (This data element is the generically identified process for which data were missing, discussed in Section II.B.2.b of this preamble.) In 76 FR 30782, we determined that the data to be reported under 40 CFR 98.3(c)(8), including the data required under the new 40 CFR 98.126(d), are emission data, and therefore are not entitled to confidential treatment. Therefore, no separate confidentiality determination is necessary due to the addition of 40 CFR 98.126(d).

B. Public Comments on the Proposed Confidentiality Determinations and Responses to Public Comment

The EPA is finalizing all confidentiality determinations for the new and substantially revised data elements as they were proposed. Please refer to the preamble for the Proposed Amendments to Subpart L for additional information regarding the proposed confidentiality determinations. Two commenters noted that the proposed CBI determinations were acceptable, given other changes to the rule and the

transition to reporting by F–GHG groups. For comments and responses regarding confidentiality determinations for new and revised data elements, please refer to the comment response document in Docket ID. No. EPA–HQ–OAR–2009–0927.

The EPA is also finalizing proposed confidentiality determinations for 10 existing data elements. Please see the preamble for the 2012 Proposed Confidentiality Determinations for additional information regarding the proposed confidentiality determinations. We did not receive any comments on these determinations.

IV. Impacts of the Final Rule

The EPA has determined that the cost associated with this final action will be $792 in the first year of implementation and $0 in each subsequent year, as further summarized below. These costs are related to the implementation of the alternative verification approach addressing the inputs to emission equations for which disclosure concerns were identified. A full discussion of these impacts may be found in the memorandum ''Assessment of Cost Impacts of 2015 Inputs Proposal—Revisions to Reporting, Recordkeeping, and Verification Requirements Under the Greenhouse Gas Reporting Program,'' August 2013, available in the EPA's docket number EPA–HQ–OAR–2010–0929. The EPA has determined that the other amendments to subpart L and subpart A being finalized in this action will not result in an increase in costs. A full discussion of the impacts of the other amendments may be found in the ''2013 Amendments to the Greenhouse Gas Reporting Rule for the Fluorinated Gas Production Source Category Cost Memo'' in docket number EPA–HQ–OAR–2009–0927.

A. How were the costs of this final rule estimated?

1. Inputs Verification Tool

The data elements required to be used for calculating the annual GHG emissions values, and the cost associated with collecting these data elements, have not changed from the estimate made during the original rulemaking process. The time associated with entry of these inputs to emission equations into e-GGRT (including into the new IVT) is expected to be equivalent to the time originally anticipated for data entry. Prior to using IVT, as currently required, reporters must use their own calculation tool (*e.g.,* calculator, calculation software) to calculate the annual GHG emissions values, using the same sets of equations

and entering the same data elements that they would enter into the tool.

The EPA does recognize, however, that there may be some time associated with learning the new procedures for IVT and we have estimated a cost of approximately $66 per facility, or $792 for the first year for all 12 subpart L facilities that do not also report under subpart O. (The burden and costs for the four facilities that report under both subpart O and subpart L are already accounted for in the Final Inputs Rule.) During their first session using IVT, reporters would need to spend approximately one hour to become familiar with how the tool operates within e-GGRT. The requirement to use IVT would not result in any change in the respondent activity of entering these data into e-GGRT. Once the reporter has become familiar with the tool, the EPA does not anticipate any additional burden. The cost includes technical, clerical, and managerial labor hours. For further information about this cost estimate, refer to the memorandum ''Assessment of Cost Impacts of 2015 Inputs Final Rule—Revisions to Reporting, Recordkeeping, and Verification Requirements Under the Greenhouse Gas Reporting Program'' (September 2014) and the supporting statement for the information collection request, ''Supporting Statement, Environmental Protection Agency: Revisions to Reporting and Recordkeeping Requirements, and Final Confidentiality Determinations Under the Greenhouse Gas Reporting Program, Office of Management and Budget (OMB) Control Number 2060–0629, ICR Number 2300.12,'' both available in Docket ID No. EPA–HQ–OAR–2010–0929.

B. Do the final confidentiality determinations change the impacts of the final amendments?

The final confidentiality determinations for the new data elements would not affect whether and how data are reported and, therefore, would not impose any additional burden on sources. Whether a data reporting element is determined to be CBI, not CBI, or emission data, the reporting element is reported to the EPA through e-GGRT in the same manner.

V. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a ''significant regulatory action'' under the terms of

Executive Order 12866 (58 FR 51735, October 4, 1993) and is therefore not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011). This action (1) amends certain provisions of the Fluorinated Gas Production source category, including finalizing an alternative verification approach for this source category in lieu of collecting certain data elements for which the EPA has identified disclosure concerns and for which the reporting deadline was deferred until March 31, 2015, (2) adds chemical-specific and default GWPs for a number of fluorinated greenhouse gases and fluorinated heat transfer fluids to the general provisions of the Greenhouse Gas Reporting Rule, and (3) finalizes confidentiality determinations for certain reporting requirements of the Fluorinated Gas Production source category.

B. Paperwork Reduction Act

The Office of Management and Budget (OMB) has approved the information collection requirements for 40 CFR part 98 under the provisions of the *Paperwork Reduction Act,* 44 U.S.C. 3501 *et seq.,* and has assigned OMB control numbers 2060–0629 and 2060–0650, respectively, and ICR 2300.10. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. The revisions in this final action result in a small increase in burden, and the ICR will be modified to reflect this burden change. Further information on the EPA's assessment on the impact on burden can be found in the analyses ''Assessment of Cost Impacts of 2015 Inputs Proposal— Revisions to Reporting, Recordkeeping, and Verification Requirements Under the Greenhouse Gas Reporting Program,'' August 2013, available in the EPA's Docket ID No. EPA–HQ–OAR–2010–0929, in the ''2013 Amendments to the Greenhouse Gas Reporting Rule for the Fluorinated Gas Production Source Category Cost Memo'' and ''Economic Analysis of Adding Chemical-Specific and Default GWPs to Table A–1'', both in docket number EPA–HQ–OAR–2009–0927.

This action (1) amends certain provisions of the Fluorinated Gas Production source category, including finalizing an alternative verification approach for this source category in lieu of collecting certain data elements for which the EPA has identified disclosure concerns and for which the reporting deadline was deferred until March 31, 2015, (2) adds chemical-specific and default GWPs for a number of fluorinated greenhouse gases and fluorinated heat transfer fluids to the

general provisions of the Greenhouse Gas Reporting Rule, and (3) finalizes confidentiality determinations for certain reporting requirements of the Fluorinated Gas Production source category.

C. Regulatory Flexibility Act (RFA)

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impact of this final rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. The addition of chemical-specific and default GWPs to subpart A is not expected to affect the applicability of the rule to small entities. The amendments to subpart L (including the requirement to enter inputs to subpart L emission equations into IVT) affect fluorinated gas producers, none of which are small entities.

Although this final rule will not have a significant economic impact on a substantial number of small entities, the EPA nonetheless has tried to reduce the impact of Part 98 on small entities. For example, the EPA conducted several meetings with industry associations to discuss regulatory options and the corresponding burden on industry, such as recordkeeping and reporting. The EPA continues to conduct significant outreach on Part 98 and maintains an ''open door'' policy for stakeholders to help inform the EPA's understanding of key issues for the industries.

D. Unfunded Mandates Reform Act (UMRA)

The final rule amendments and confidentiality determinations do not contain a federal mandate that may

result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. Thus, the final rule amendments and confidentiality determinations are not subject to the requirements of Sections 202 and 205 of the UMRA.

This final rule is also not subject to the requirements of Section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. Facilities and suppliers subject to the rule include fluorinated gas producers, electronics manufacturers, magnesium producers and processors, manufacturers and users of electrical equipment, importers and exporters of fluorinated GHGs in bulk, and importers and exporters of pre-charged equipment and closed-cell foams that contain fluorinated GHGs. None of the facilities currently known to undertake these activities is owned by a small government. Therefore, this action is not subject to the requirements of Section 203 of the UMRA.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. For a more detailed discussion about how Part 98 relates to existing state programs, please see Section II of the preamble to the final Greenhouse Gas reporting rule (74 FR 56266, October 30, 2009).

The final amendments and confidentiality determinations apply directly to fluorinated gas producers, electronics manufacturers, magnesium producers and processors, manufacturers and users of electrical equipment, importers and exporters of fluorinated GHGs in bulk, and importers and exporters of pre-charged equipment and closed-cell foams that contain fluorinated GHGs. They do not apply to governmental entities unless the government entity owns a facility that falls into one of these categories and that emits or supplies fluorinated GHGs above threshold levels. We are not aware of any governmental entities that would be affected. This regulation also does not limit the power of states or localities to collect GHG data and/or regulate GHG emissions. Thus, Executive Order 13132 does not apply to this action.

Although Section 6 of Executive Order 13132 does not apply to this

action, the EPA did consult with state and local officials or representatives of state and local governments in developing subpart L, promulgated on December 1, 2010. A summary of the EPA's consultations with state and local governments is provided in Section VIII.E of the preamble to the 2009 final rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between the EPA and state and local governments, the EPA specifically solicited comment on the proposed action from state and local officials. We received no comments from state and local officials on the proposed rule.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). The final amendments and confidentiality determinations apply to fluorinated gas producers, electronics manufacturers, magnesium producers and processors, manufacturers and users of electrical equipment, importers and exporters of fluorinated GHGs in bulk, and importers and exporters of pre-charged equipment and closed-cell foams that contain fluorinated GHGs. They will not have tribal implications unless the tribal entity owns a facility that falls into one of these categories and that emits or supplies fluorinated GHGs above threshold levels. We are not aware of any tribal facilities that will be affected. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under Section 5–501 of the Executive Order has the potential to influence the regulation. This action is not subject to Executive Order 13045 because it does not establish an environmental standard intended to mitigate health or safety risks.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 (66 FR 28355, May 22,

2001), because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104– 113 (15 U.S.C. 272 note), directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs the EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This final rule does not involve any new technical standards. Therefore, the EPA did not consider the use of specific voluntary consensus standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes Federal executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

The EPA has determined that this final rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. It does not affect the level of protection provided to human health or the environment because it is a rule addressing information collection and reporting procedures.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.,* as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the

agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). This rule will be effective on January 1, 2015.

List of Subjects 40 CFR Part 98

Environmental protection, Administrative practice and procedure, Greenhouse gases, Reporting and recordkeeping requirements.

Dated: November 25, 2014.

Gina McCarthy,

Administrator.

For the reasons stated in the preamble, part 98 of title 40, chapter I, of the Code of Federal Regulations is amended as follows:

PART 98—MANDATORY GREENHOUSE GAS REPORTING

■ 1. The authority citation for part 98 continues to read as follows:

Authority: 42 U.S.C. 7401, *et seq.*

Subpart A—General Provisions

■ 2. Section 98.2 is amended by revising paragraphs (b)(1) and (4) and (f)(1) to read as follows:

§ 98.2   Who must report?

* * * * *

(b) * * *

(1) Calculate the annual emissions of CO_2, CH_4, N_2O, and each fluorinated GHG in metric tons from all applicable source categories listed in paragraph (a)(2) of this section. The GHG emissions shall be calculated using the calculation methodologies specified in each applicable subpart and available company records.

* * * * *

(4) Sum the emissions estimates from paragraphs (b)(1), (b)(2), and (b)(3) of this section for each GHG and calculate metric tons of CO_2e using Equation A– 1 of this section.

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i \qquad\qquad \text{(Eq. A-1)}$$

Where:

CO_2e = Carbon dioxide equivalent, metric tons/year.

GHG_i = Mass emissions of each greenhouse gas, metric tons/year.

GWP_i = Global warming potential for each greenhouse gas from Table A–1 of this subpart.

n = The number of greenhouse gases emitted.

* * * * *

(f) * * *

(1) Calculate the mass in metric tons per year of CO_2, N_2O, and each fluorinated GHG that is imported and the mass in metric tons per year of CO_2, N_2O, and each fluorinated GHG that is exported during the year.

* * * * *

■ 3. Section 98.3 is amended by:
■ a. Revising paragraphs (c)(4)(iii)(E) and (F) and (c)(5)(i) and (ii);
■ b. Removing and reserving paragraph (c)(4)(vi);
■ c. Revising paragraph (k);
■ d. Revising paragraphs (l) introductory text, (1)(1), and (1)(2) introductory text;
■ e. Revising paragraphs (l)(2)(i), (l)(2)(ii)(C) through (E), and (l)(2)(iii).

The revisions read as follows:

§ 98.3 What are the general monitoring, reporting, recordkeeping, and verification requirements of this part?

* * * * *

(c) * * *

(4) * * *

(iii) * * *

(E) Each fluorinated GHG (as defined in § 98.6), except fluorinated gas production facilities must comply with § 98.126(a) rather than this paragraph (c)(4)(iii)(E). If a fluorinated GHG does not have a chemical-specific GWP in Table A–1 of this subpart, identify and report the fluorinated GHG group of which that fluorinated GHG is a member.

(F) For electronics manufacturing (as defined in § 98.90), each fluorinated heat transfer fluid (as defined in § 98.98) that is not also a fluorinated GHG as specified under (c)(4)(iii)(E) of this section. If a fluorinated heat transfer fluid does not have a chemical-specific GWP in Table A–1 of this subpart, identify and report the fluorinated GHG group of which that fluorinated heat transfer fluid is a member.

* * * * *

(5) * * *

(i) Total quantity of GHG aggregated for all GHG from all applicable supply categories in Table A–5 of this subpart

and expressed in metric tons of CO_2e calculated using Equation A–1 of this subpart.

(ii) Quantity of each GHG from each applicable supply category in Table A–5 to this subpart, expressed in metric tons of each GHG.

* * * * *

(k) *Revised global warming potentials and special provisions for reporting year 2013 and subsequent reporting years.* This paragraph (k) applies to owners or operators of facilities or suppliers that first become subject to any subpart of part 98 solely due to an amendment to Table A–1 of this subpart.

(1) A facility or supplier that first becomes subject to part 98 due to a change in the GWP for one or more compounds in Table A–1 of this subpart, Global Warming Potentials, is not required to submit an annual GHG report for the reporting year during which the change in GWPs is published.

(2) A facility or supplier that was already subject to one or more subparts of part 98 but becomes subject to one or more additional subparts due to a change in the GWP for one or more compounds in Table A–1 of this subpart, is not required to include those subparts to which the facility is subject only due to the change in the GWP in the annual GHG report submitted for the reporting year during which the change in GWPs is published.

(3) Starting on January 1 of the year after the year during which the change in GWPs is published, facilities or suppliers identified in paragraphs (k)(1) or (2) of this section must start monitoring and collecting GHG data in compliance with the applicable subparts of part 98 to which the facility is subject due to the change in the GWP for the annual greenhouse gas report for that reporting year, which is due by March 31 of the following calendar year.

(4) A change in the GWP for one or more compounds includes the addition to Table A–1 of this subpart of either a chemical-specific or a default GWP that applies to a compound to which no chemical-specific GWP in Table A–1 of this subpart previously applied.

(l) *Special provision for best available monitoring methods in 2014 and subsequent years.* This paragraph (l) applies to owners or operators of facilities or suppliers that first become subject to any subpart of part 98 due to an amendment to Table A–1 of this subpart, Global Warming Potentials.

(1) *Best available monitoring methods.* From January 1 to March 31 of the year after the year during which the change in GWPs is published, owners or operators subject to this paragraph (l) may use best available monitoring methods for any parameter (*e.g.,* fuel use, feedstock rates) that cannot reasonably be measured according to the monitoring and QA/QC requirements of a relevant subpart. The owner or operator must use the calculation methodologies and equations in the ''Calculating GHG Emissions'' sections of each relevant subpart, but may use the best available monitoring method for any parameter for which it is not reasonably feasible to acquire, install, and operate a required piece of monitoring equipment by January 1 of the year after the year during which the change in GWPs is published. Starting no later than April 1 of the year after the year during which the change in GWPs is published, the owner or operator must discontinue using best available methods and begin following all applicable monitoring and QA/QC requirements of this part, except as provided in paragraph (l)(2) of this section. Best available monitoring methods means any of the following methods:

* * * * *

(2) *Requests for extension of the use of best available monitoring methods.* The owner or operator may submit a request to the Administrator to use one or more best available monitoring methods beyond March 31 of the year after the year during which the change in GWPs is published.

(i) *Timing of request.* The extension request must be submitted to EPA no later than January 31 of the year after the year during which the change in GWPs is published.

(ii) * * *

(C) A description of the reasons that the needed equipment could not be obtained and installed before April 1 of the year after the year during which the change in GWPs is published.

(D) If the reason for the extension is that the equipment cannot be purchased and delivered by April 1 of the year after the year during which the change in GWPs is published, include supporting documentation such as the date the monitoring equipment was ordered, investigation of alternative suppliers and the dates by which alternative vendors promised delivery, backorder notices or unexpected delays,

descriptions of actions taken to expedite delivery, and the current expected date of delivery.

(E) If the reason for the extension is that the equipment cannot be installed without a process unit shutdown, include supporting documentation demonstrating that it is not practicable to isolate the equipment and install the monitoring instrument without a full process unit shutdown. Include the date of the most recent process unit shutdown, the frequency of shutdowns for this process unit, and the date of the next planned shutdown during which the monitoring equipment can be installed. If there has been a shutdown or if there is a planned process unit shutdown between November 29 of the year during which the change in GWPs is published and April 1 of the year after the year during which the change in GWPs is published, include a justification of why the equipment could not be obtained and installed during that shutdown.

*   *   *   *   *

(iii) *Approval criteria.* To obtain approval, the owner or operator must demonstrate to the Administrator's satisfaction that it is not reasonably feasible to acquire, install, and operate a required piece of monitoring equipment by April 1 of the year after the year during which the change in GWPs is published. The use of best available methods under this paragraph (l) will not be approved beyond December 31 of the year after the year during which the change in GWPs is published.

■ 4. Section 98.5 is amended by revising paragraph (b) to read as follows:

§ 98.5 How is the report submitted?

*   *   *   *   *

(b) For reporting year 2014 and thereafter, unless a later year is specified in the applicable recordkeeping section, you must enter into verification software specified by the Administrator the data specified in the verification software records provision in each applicable recordkeeping section. For each data element entered into the verification software, if the software produces a warning message for the data value and you elect not to revise the data value, you may provide an explanation in the verification software of why the data value is not being revised.

■ 5. Section 98.6 is amended by:
■ a. Adding, in alphabetical order, the definition for Carbonofluoridates;
■ b. Adding, in alphabetical order, the definition for Fluorinated acetates;

■ c. Adding, in alphabetical order, the definition for Fluorinated alcohols other than fluorotelomer alcohols;
■ d. Adding, in alphabetical order, the definition for Fluorinated formates;
■ e. Adding, in alphabetical order, the definition for Fluorinated GHG group;
■ f. Adding, in alphabetical order, the definition for Fluorotelomer alcohols;
■ g. Adding, in alphabetical order, the definition for Fully fluorinated GHGs;
■ h. Revising the definition for Global warming potential;
■ i. Adding, in alphabetical order, the definition for Other fluorinated GHGs;
■ j. Adding, in alphabetical order, the definition for Saturated hydrochlorofluoroethers (HCFEs);
■ k. Adding, in alphabetical order, the definition for Saturated hydrofluorocarbons (HFCs);
■ l. Adding, in alphabetical order, the definition for Saturated hydrofluoroethers (HFEs);
■ m. Adding, in alphabetical order, the definition for Unsaturated halogenated ethers.
■ n. Adding, in alphabetical order, the definition for Unsaturated hydrochlorofluorocarbons (HCFCs);
■ o. Adding, in alphabetical order, the definition for Unsaturated hydrofluorocarbons (HFCs); and
■ p. Adding, in alphabetical order, the definition for Unsaturated perfluorocarbons (PFCs).

The revisions and additions read as follows:

§ 98.6 Definitions.

*   *   *   *   *

Carbonofluoridates means fluorinated GHGs that are composed of a -OCF(O) group (carbonyl group with a single-bonded oxygen atom and a fluorine atom) that is linked on the single-bonded oxygen to another hydrocarbon group in which one or more of the hydrogen atoms may be replaced by fluorine atoms.

*   *   *   *   *

Fluorinated acetates means fluorinated GHGs that are composed of an acetate group with one or more valence locations on the methyl group of the acetate occupied by fluorine atoms (*e.g.,* $CFH_2C(O)O-$, $CF_2HC(O)O-$) and, linked to the single-bonded oxygen of the acetate group, another hydrocarbon group in which one or more of the hydrogen atoms may be replaced by fluorine atoms.

Fluorinated alcohols other than fluorotelomer alcohols means fluorinated GHGs that include an alcohol functional group (-OH) and that do not meet the definition of fluorotelomer alcohols.

Fluorinated formates means fluorinated GHGs that are composed of

a formate group -OCH(O) (carbonyl group with a single-bonded oxygen, and with a hydrogen atom) that is linked on the single-bonded oxygen atom to a hydrocarbon group in which one or more of the hydrogen atoms in the hydrocarbon group is replaced by fluorine atoms; the typical formula for fluorinated formates is $F_nROCH(O)$.

*   *   *   *   *

Fluorinated greenhouse gas (GHG) group means one of the following sets of fluorinated GHGs: Fully fluorinated GHGs; saturated hydrofluorocarbons with 2 or fewer carbon-hydrogen bonds; saturated hydrofluorocarbons with 3 or more carbon-hydrogen bonds; saturated hydrofluoroethers and hydrochlorofluoroethers with 1 carbon-hydrogen bond; saturated hydrofluoroethers and hydrochlorofluoroethers with 2 carbon-hydrogen bonds; saturated hydrofluoroethers and hydrochlorofluoroethers with 3 or more carbon-hydrogen bonds; fluorinated formates; fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols; unsaturated PFCs, unsaturated HFCs, unsaturated HCFCs, unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones; fluorotelomer alcohols; fluorinated GHGs with carbon-iodine bonds; or other fluorinated GHGs.

Fluorotelomer alcohols means fluorinated GHGs with the chemical formula $C_nF_{2n+1}CH_2CH_2OH$.

*   *   *   *   *

Fully fluorinated GHGs means fluorinated GHGs that contain only single bonds and in which all available valence locations are filled by fluorine atoms. This includes but is not limited to: Saturated perfluorocarbons; SF_6; NF_3; SF_5CF_3; fully fluorinated linear, branched, and cyclic alkanes; fully fluorinated ethers; fully fluorinated tertiary amines; fully fluorinated aminoethers; and perfluoropolyethers.

*   *   *   *   *

Global warming potential or GWP means the ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of a reference gas (*i.e.,* CO_2). GWPs for each greenhouse gas are provided in Table A–1 of this subpart. For purposes of the calculations in this part, if the GHG has a chemical-specific GWP listed in Table A–1, use that GWP. Otherwise, use the default GWP provided in Table A–1 for the

fluorinated GHG group of which the GHG is a member.

* * * * *

Other fluorinated GHGs means fluorinated GHGs that are none of the following: Fully fluorinated GHGs; saturated hydrofluorocarbons with 2 or fewer carbon-hydrogen bonds; saturated hydrofluorocarbons with 3 or more carbon-hydrogen bonds; saturated hydrofluoroethers and hydrochlorofluoroethers with 1 carbon-hydrogen bond; saturated hydrofluoroethers and hydrochlorofluoroethers with 2 carbon-hydrogen bonds; saturated hydrofluoroethers and hydrochlorofluoroethers with 3 or more carbon-hydrogen bonds; fluorinated formates; fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols; unsaturated PFCs, unsaturated HFCs, unsaturated HCFCs, unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones;

fluorotelomer alcohols; or fluorinated GHGs with carbon-iodine bonds.

* * * * *

Saturated hydrochlorofluoroethers (HCFEs) means fluorinated GHGs in which two hydrocarbon groups are linked by an oxygen atom; in which two or more, but not all, of the hydrogen atoms in the hydrocarbon groups have been replaced by fluorine atoms and chlorine atoms; and which contain only single bonds.

Saturated hydrofluorocarbons (HFCs) means fluorinated GHGs that are hydrofluorocarbons and that contain only single bonds.

Saturated hydrofluoroethers (HFEs) means fluorinated GHGs in which two hydrocarbon groups are linked by an oxygen atom; in which one or more, but not all, of the hydrogen atoms in the hydrocarbon groups have been replaced by fluorine atoms; and which contain only single bonds.

* * * * *

Unsaturated halogenated ethers means fluorinated GHGs in which two

hydrocarbon groups are linked by an oxygen atom; in which one or more of the hydrogen atoms in the hydrocarbon groups have been replaced by fluorine atoms; and which contain one or more bonds that are not single bonds. Unsaturated ethers include unsaturated HFEs.

Unsaturated hydrochlorofluorocarbons (HCFCs) means fluorinated GHGs that contain only carbon, chlorine, fluorine, and hydrogen and that contain one or more bonds that are not single bonds.

Unsaturated hydrofluorocarbons (HFCs) means fluorinated GHGs that are hydrofluorocarbons and that contain one or more bonds that are not single bonds.

Unsaturated perfluorocarbons (PFCs) means fluorinated GHGs that are perfluorocarbons and that contain one or more bonds that are not single bonds.

* * * * *

■ 6. Table A–1 to Subpart A is revised to read as follows:

TABLE A–1 TO SUBPART A OF PART 98—GLOBAL WARMING POTENTIALS

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Chemical-Specific GWPs			
Carbon dioxide	124–38–9	CO_2	1
Methane	74–82–8	CH_4	[a] 25
Nitrous oxide	10024–97–2	N_2O	[a] 298
Fully Fluorinated GHGs			
Sulfur hexafluoride	2551–62–4	SF_6	[a] 22,800
Trifluoromethyl sulphur pentafluoride	373–80–8	SF_5CF_3	17,700
Nitrogen trifluoride	7783–54–2	NF_3	17,200
PFC–14 (Perfluoromethane)	75–73–0	CF_4	[a] 7,390
PFC–116 (Perfluoroethane)	76–16–4	C_2F_6	[a] 12,200
PFC–218 (Perfluoropropane)	76–19–7	C_3F_8	[a] 8,830
Perfluorocyclopropane	931–91–9	$C-C_3F_6$	17,340
PFC–3–1–10 (Perfluorobutane)	355–25–9	C_4F_{10}	[a] 8,860
PFC–318 (Perfluorocyclobutane)	115–25–3	$C-C_4F_8$	[a] 10,300
PFC–4–1–12 (Perfluoropentane)	678–26–2	C_5F_{12}	[a] 9,160
PFC–5–1–14 (Perfluorohexane, FC–72)	355–42–0	C_6F_{14}	[a] 9,300
PFC–6–1–12	335–57–9	C_7F_{16}; $CF_3(CF_2)_5CF_3$	[b] 7,820
PFC–7–1–18	307–34–6	C_8F_{18}; $CF_3(CF_2)_6CF_3$	[b] 7,620
PFC–9–1–18	306–94–5	$C_{10}F_{18}$	7,500
PFPMIE (HT–70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10,300
Perfluorodecalin (cis)	60433–11–6	$Z-C_{10}F_{18}$	[b] 7,236
Perfluorodecalin (trans)	60433–12–7	$E-C_{10}F_{18}$	[b] 6,288
Saturated Hydrofluorocarbons (HFCs) With Two or Fewer Carbon-Hydrogen Bonds			
HFC–23	75–46–7	CHF_3	[a] 14,800
HFC–32	75–10–5	CH_2F_2	[a] 675
HFC–125	354–33–6	C_2HF_5	[a] 3,500
HFC–134	359–35–3	$C_2H_2F_4$	[a] 1,100
HFC–134a	811–97–2	CH_2FCF_3	[a] 1,430
HFC–227ca	2252–84–8	$CF_3CF_2CHF_2$	[b] 2640
HFC–227ea	431–89–0	C_3HF_7	[a] 3,220
HFC–236cb	677–56–5	$CH_2FCF_2CF_3$	1,340
HFC–236ea	431–63–0	CHF_2CHFCF_3	1,370

TABLE A–1 TO SUBPART A OF PART 98—GLOBAL WARMING POTENTIALS—Continued

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
HFC–236fa	690–39–1	$C_3H_2F_6$	[a] 9,810
HFC–329p	375–17–7	$CHF_2CF_2CF_2CF_3$	[b] 2360
HFC–43–10mee	138495–42–8	$CF_3CFHCFHCF_2CF_3$	[a] 1,640
Saturated Hydrofluorocarbons (HFCs) With Three or More Carbon-Hydrogen Bonds			
HFC–41	593–53–3	CH_3F	[a] 92
HFC–143	430–66–0	$C_2H_3F_3$	[a] 353
HFC–143a	420–46–2	$C_2H_3F_3$	[a] 4,470
HFC–152	624–72–6	CH_2FCH_2F	53
HFC–152a	75–37–6	CH_3CHF_2	[a] 124
HFC–161	353–36–6	CH_3CH_2F	12
HFC–245ca	679–86–7	$C_3H_3F_5$	[a] 693
HFC–245cb	1814–88–6	$CF_3CF_2CH_3$	[b] 4620
HFC–245ea	24270–66–4	$CHF_2CHFCHF_2$	[b] 235
HFC–245eb	431–31–2	$CH_2FCHFCF_3$	[b] 290
HFC–245fa	460–73–1	$CHF_2CH_2CF_3$	1,030
HFC–263fb	421–07–8	$CH_3CH_2CF_3$	[b] 76
HFC–272ca	420–45–1	$CH_3CF_2CH_3$	[b] 144
HFC–365mfc	406–58–6	$CH_3CF_2CH_2CF_3$	794
Saturated Hydrofluoroethers (HFEs) and Hydrochlorofluoroethers (HCFEs) With One Carbon-Hydrogen Bond			
HFE–125	3822–68–2	CHF_2OCF_3	14,900
HFE–227ea	2356–62–9	$CF_3CHFOCF_3$	1,540
HFE–329mcc2	134769–21–4	$CF_3CF_2OCF_2CHF_2$	919
HFE–329me3	428454–68–6	$CF_3CFHCF_2OCF_3$	[b] 4,550
1,1,1,2,2,3,3-Heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)-propane	3330–15–2	$CF_3CF_2CF_2OCHFCF_3$	[b] 6,490
Saturated HFEs and HCFEs With Two Carbon-Hydrogen Bonds			
HFE–134 (HG–00)	1691–17–4	CHF_2OCHF_2	6,320
HFE–236ca	32778–11–3	$CHF_2OCF_2CHF_2$	[b] 4,240
HFE–236ca12 (HG–10)	78522–47–1	$CHF_2OCF_2OCHF_2$	2,800
HFE–236ea2 (Desflurane)	57041–67–5	$CHF_2OCHFCF_3$	989
HFE–236fa	20193–67–3	$CF_3CH_2OCF_3$	487
HFE–338mcf2	156053–88–2	$CF_3CF_2OCH_2CF_3$	552
HFE–338mmz1	26103–08–2	$CHF_2OCH(CF_3)_2$	380
HFE–338pcc13 (HG–01)	188690–78–0	$CHF_2OCF_2CF_2OCHF_2$	1,500
HFE–43–10pccc (H-Galden 1040x, HG–11)	E1730133	$CHF_2OCF_2OC_2F_4OCHF_2$	1,870
HCFE–235ca2 (Enflurane)	13838–16–9	CHF_2OCF_2CHFCl	[b] 583
HCFE–235da2 (Isoflurane)	26675–46–7	$CHF_2OCHClCF_3$	350
HG–02	205367–61–9	$HF_2C-(OCF_2CF_2)$	[b] 3,825
HG–03	173350–37–3	$HF_2C-(OCF_2CF_2)$	[b] 3,670
HG–20	249932–25–0	$HF_2C-(OCF_2)$	[b] 5,300
HG–21	249932–26–1	$HF_2C-OCF_2CF_2OCF_2OCF_2O–CF_2H$	[b] 3,890
HG–30	188690–77–9	$HF_2C-(OCF_2)$	[b] 7,330
1,1,3,3,4,4,6,6,7,7,9,9,10,10,12,12,13,13,15,15-eicosafluoro-2,5,8,11,14-Pentaoxapentadecane.	173350–38–4	$HCF_2O(CF_2CF_2O)_4CF_2H$	[b] 3,630
1,1,2-Trifluoro-2-(trifluoromethoxy)-ethane	84011–06–3	$CHF_2CHFOCF_3$	[b] 1,240
Trifluoro(fluoromethoxy)methane	2261–01–0	CH_2FOCF_3	[b] 751
Saturated HFEs and HCFEs With Three or More Carbon-Hydrogen Bonds			
HFE–143a	421–14–7	CH_3OCF_3	756
HFE–245cb2	22410–44–2	$CH_3OCF_2CF_3$	708
HFE–245fa1	84011–15–4	$CHF_2CH_2OCF_3$	286
HFE–245fa2	1885–48–9	$CHF_2OCH_2CF_3$	659
HFE–254cb2	425–88–7	$CH_3OCF_2CHF_2$	359
HFE–263fb2	460–43–5	$CF_3CH_2OCH_3$	11
HFE–263m1; R–E–143a	690–22–2	$CF_3OCH_2CH_3$	[b] 29
HFE–347mcc3 (HFE–7000)	375–03–1	$CH_3OCF_2CF_2CF_3$	575
HFE–347mcf2	171182–95–9	$CF_3CF_2OCH_2CHF_2$	374
HFE–347mmy1	22052–84–2	$CH_3OCF(CF_3)_2$	343
HFE–347mmz1 (Sevoflurane)	28523–86–6	$(CF_3)_2CHOCH_2F$	[c] 216
HFE–347pcf2	406–78–0	$CHF_2CF_2OCH_2CF_3$	580
HFE–356mec3	382–34–3	$CH_3OCF_2CHFCF_3$	101
HFE–356mff2	333–36–8	$CF_3CH_2OCH_2CF_3$	[b] 17

TABLE A–1 TO SUBPART A OF PART 98—GLOBAL WARMING POTENTIALS—Continued

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
HFE–356mmz1	13171–18–1	(CF_3)	27
HFE–356pcc3	160620–20–2	$CH_3OCF_2CF_2CHF_2$	110
HFE–356pcf2	50807–77–7	$CHF_2CH_2OCF_2CHF_2$	265
HFE–356pcf3	35042–99–0	CHF_2OCH	502
HFE–365mcf2	22052–81–9	$CF_3CF_2OCH_2CH_3$	[b] 58
HFE–365mcf3	378–16–5	$CF_3CF_2CH_2OCH_3$	11
HFE–374pc2	512–51–6	$CH_3CH_2OCF_2CHF_2$	557
HFE–449s1 (HFE–7100) Chemical blend	163702–07–6	C_4F	297
	163702–08–7	(CF_3).	
HFE–569sf2 (HFE–7200) Chemical blend	163702–05–4	$C_4F_9OC_2H_5$	59
	163702–06–5	$(CF_3)_2CFCF_2OC_2H_5$.	
HG'-01	73287–23–7	$CH_3OCF_2CF_2OCH_3$	[b] 222
HG'-02	485399–46–0	$CH_3O(CF_2CF_2O)_2CH_3$	[b] 236
HG'-03	485399–48–2	$CH_3O(CF_2CF_2O)$	[b] 221
Difluoro(methoxy)methane	359–15–9	CH_3OCHF_2	[b] 144
2-Chloro-1,1,2-trifluoro-1-methoxyethane	425–87–6	CH_3OCF_2CHFCl	[b] 122
1-Ethoxy-1,1,2,2,3,3,3-heptafluoropropane	22052–86–4	$CF_3CF_2CF_2OCH_2CH_3$	[b] 61
2-Ethoxy-3,3,4,4,5-pentafluorotetrahydro-2,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-furan.	920979–28–8	$C_{12}H_5F_{19}O_2$	[b] 56
1-Ethoxy-1,1,2,3,3,3-hexafluoropropane	380–34–7	CF_3CHFCF	[b] 23
Fluoro(methoxy)methane	460–22–0	CH_3OCH_2F	[b] 13
1,1,2,2-Tetrafluoro-3-methoxy-propane; Methyl 2,2,3,3-tetrafluoro propyl ether.	60598–17–6	$CHF_2CF_2CH_2OCH_3$	[b] 0.5
1,1,2,2-Tetrafluoro-1-(fluoromethoxy)ethane	37031–31–5	$CH_2FOCF_2CF_2H$	[b] 871
Difluoro(fluoromethoxy)methane	461–63–2	CH_2FOCHF_2	[b] 617
Fluoro(fluoromethoxy)methane	462–51–1	CH_2FOCH_2F	[b] 130

Fluorinated Formates

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Trifluoromethyl formate	85358–65–2	$HCOOCF_3$	[b] 588
Perfluoroethyl formate	313064–40–3	$HCOOCF_2CF_3$	[b] 580
1,2,2,2-Tetrafluoroethyl formate	481631–19–0	$HCOOCHFCF_3$	[b] 470
Perfluorobutyl formate	197218–56–7	$HCOOCF_2CF_2CF_2CF_3$	[b] 392
Perfluoropropyl formate	271257–42–2	$HCOOCF_2CF_2CF_3$	[b] 376
1,1,1,3,3,3-Hexafluoropropan-2-yl formate	856766–70–6	$HCOOCH(CF_3)$	[b] 333
2,2,2-Trifluoroethyl formate	32042–38–9	$HCOOCH_2CF_3$	[b] 33
3,3,3-Trifluoropropyl formate	1344118–09–7	$HCOOCH_2CH_2CF_3$	[b] 17

Fluorinated Acetates

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Methyl 2,2,2-trifluoroacetate	431–47–0	CF_3COOCH_3	[b] 52
1,1-Difluoroethyl 2,2,2-trifluoroacetate	1344118–13–3	$CF_3COOCF_2CH_3$	[b] 31
Difluoromethyl 2,2,2-trifluoroacetate	2024–86–4	$CF_3COOCHF_2$	[b] 27
2,2,2-Trifluoroethyl 2,2,2-trifluoroacetate	407–38–5	$CF_3COOCH_2CF_3$	[b] 7
Methyl 2,2-difluoroacetate	433–53–4	HCF_2COOCH_3	[b] 3
Perfluoroethyl acetate	343269–97–6	$CH_3COOCF_2CF_3$	[b] 2.1
Trifluoromethyl acetate	74123–20–9	CH_3COOCF_3	[b] 2.0
Perfluoropropyl acetate	1344118–10–0	$CH_3COOCF_2CF_2CF_3$	[b] 1.8
Perfluorobutyl acetate	209597–28–4	$CH_3COOCF_2CF_2CF_2CF_3$	[b] 1.6
Ethyl 2,2,2-trifluoroacetate	383–63–1	$CF_3COOCH_2CH_3$	[b] 1.3

Carbonofluoridates

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Methyl carbonofluoridate	1538–06–3	$FCOOCH_3$	[b] 95
1,1-Difluoroethyl carbonofluoridate	1344118–11–1	$FCOOCF_2CH_3$	[b] 27

Fluorinated Alcohols Other Than Fluorotelomer Alcohols

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Bis(trifluoromethyl)-methanol	920–66–1	$(CF_3)_2CHOH$	195
(Octafluorotetramethy-lene) hydroxymethyl group	NA	$X-(CF_2)_4CH(OH)-X$	73
2,2,3,3,3-Pentafluoropropanol	422–05–9	$CF_3CF_2CH_2OH$	42
2,2,3,3,4,4,4-Heptafluorobutan-1-ol	375–01–9	C_3F_7CH2OH	[b] 25
2,2,2-Trifluoroethanol	75–89–8	CF_3CH_2OH	[b] 20
2,2,3,4,4,4-Hexafluoro-1-butanol	382–31–0	$CF_3CHFCF_2CH_2OH$	[b] 17
2,2,3,3-Tetrafluoro-1-propanol	76–37–9	$CHF_2CF_2CH_2OH$	[b] 13
2,2-Difluoroethanol	359–13–7	CHF_2CH2OH	[b] 3
2-Fluoroethanol	371–62–0	CH_2FCH_2OH	[b] 1.1
4,4,4-Trifluorobutan-1-ol	461–18–7	$CF_3(CH_2)$	[b] 0.05

TABLE A–1 TO SUBPART A OF PART 98—GLOBAL WARMING POTENTIALS—Continued

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Unsaturated Perfluorocarbons (PFCs)			
PFC–1114; TFE	116–14–3	$CF_2=CF_2$; C_2F_4	[b] 0.004
PFC–1216; Dyneon HFP	116–15–4	C_3F_6; $CF_3CF=CF_2$	[b] 0.05
PFC C–1418	559–40–0	$c-C_5F_8$	[b] 1.97
Perfluorobut-2-ene	360–89–4	$CF_3CF=CFCF_3$	[b] 1.82
Perfluorobut-1-ene	357–26–6	$CF_3CF_2CF=CF_2$	[b] 0.10
Perfluorobuta-1,3-diene	685–63–2	$CF_2=CFCF=CF_2$	[b] 0.003
Unsaturated Hydrofluorocarbons (HFCs) and Hydrochlorofluorocarbons (HCFCs)			
HFC–1132a; VF2	75–38–7	C_2H	[b] 0.04
HFC–1141; VF	75–02–5	C_2H	[b] 0.02
(E)-HFC–1225ye	5595–10–8	$CF_3CF=CHF(E)$	[b] 0.06
(Z)-HFC–1225ye	5528–43–8	$CF_3CF=CHF(Z)$	[b] 0.22
Solstice 1233zd(E)	102687–65–0	$C_3H_2ClF_3$; $CHCl=CHCF_3$	[b] 1.34
HFC–1234yf; HFO–1234yf	754–12–1	$C_3H_2F_4$; $CF_3CF=CH_2$	[b] 0.31
HFC–1234ze(E)	1645–83–6	$C_3H_2F_4$; trans-$CF_3CH=CHF$	[b] 0.97
HFC–1234ze(Z)	29118–25–0	$C_3H_2F_4cis-CF_3CH=CHF$; $CF_3CH=CHF$	[b] 0.29
HFC–1243zf; TFP	677–21–4	$C_3H_3F_3$, $CF_3CH=CH_2$	[b] 0.12
(Z)-HFC–1336	692–49–9	$CF_3CH=CHCF_3(Z)$	[b] 1.58
HFC–1345zfc	374–27–6	$C_2F_5CH=CH_2$	[b] 0.09
Capstone 42–U	19430–93–4	$C_6H_3F_9$, $CF_3(CF_2)$	[b] 0.16
Capstone 62–U	25291–17–2	$C_8H_3F_{13}$, $CF_3(CF_2)_5CH=CH_2$	[b] 0.11
Capstone 82–U	21652–58–4	$C_{10}H_3F_{17}$, $CF_3(CF_2)_7CH=CH_2$	[b] 0.09
Unsaturated Halogenated Ethers			
PMVE; HFE–216	1187–93–5	$CF_3OCF=CF_2$	[b] 0.17
Fluoroxene	406–90–6	$CF_3CH_2OCH=CH_2$	[b] 0.05
Fluorinated Aldehydes			
3,3,3-Trifluoro-propanal	460–40–2	CF_3CH_2CHO	[b] 0.01
Fluorinated Ketones			
Novec 1230 (perfluoro (2-methyl-3-pentanone))	756–13–8	$CF_3CF_2C(O)CF(CF3)_2$	[b] 0.1
Fluorotelomer Alcohols			
3,3,4,4,5,5,6,6,7,7,7-Undecafluoroheptan-1-ol	185689–57–0	CF	[b] 0.43
3,3,3-Trifluoropropan-1-ol	2240–88–2	$CF_3CH_2CH_2OH$	[b] 0.35
3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-Pentadecafluorononan-1-ol	755–02–2	$CF_3(CF_2)_6CH_2CH_2OH$	[b] 0.33
3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-Nonadecafluoroundecan-1-ol.	87017–97–8	$CF_3(CF_2)_8CH_2CH_2OH$	[b] 0.19
Fluorinated GHGs With Carbon-Iodine Bond(s)			
Trifluoroiodomethane	2314–97–8	CF_3I	[b] 0.4
Other Fluorinated Compounds			
Dibromodifluoromethane (Halon 1202)	75–61–6	CBR_2F_2	[b] 231
2-Bromo-2-chloro-1,1,1-trifluoroethane (Halon-2311/Halothane)	151–67–7	$CHBrClCF_3$	[b] 41

Fluorinated GHG Group [d]			Global warming potential (100 yr.)
Default GWPs for Compounds for Which Chemical-Specific GWPs Are Not Listed Above			
Fully fluorinated GHGs			10,000
Saturated hydrofluorocarbons (HFCs) with 2 or fewer carbon-hydrogen bonds			3,700
Saturated HFCs with 3 or more carbon-hydrogen bonds			930
Saturated hydrofluoroethers (HFEs) and hydrochlorofluoroethers (HCFEs) with 1 carbon-hydrogen bond			5,700
Saturated HFEs and HCFEs with 2 carbon-hydrogen bonds			2,600
Saturated HFEs and HCFEs with 3 or more carbon-hydrogen bonds			270
Fluorinated formates			350

Fluorinated GHG Group [d]	Global warming potential (100 yr.)
Fluorinated acetates, carbonofluoridates, and fluorinated alcohols other than fluorotelomer alcohols	30
Unsaturated perfluorocarbons (PFCs), unsaturated HFCs, unsaturated hydrochlorofluorocarbons (HCFCs), unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones	1
Fluorotelomer alcohols	1
Fluorinated GHGs with carbon-iodine bond(s)	1
Other fluorinated GHGs	2,000

[a] The GWP for this compound was updated in the final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014.
[b] This compound was added to Table A–1 in the final rule published on December 11, 2014, and effective on January 1, 2015.
[c] The GWP for this compound was updated in the final rule published on December 11, 2014, and effective on January 1, 2015 .
[d] For electronics manufacturing (as defined in §98.90), the term "fluorinated GHGs" in the definition of each fluorinated GHG group in §98.6 shall include fluorinated heat transfer fluids (as defined in §98.98), whether or not they are also fluorinated GHGs.

■ 7. Table A–7 of subpart A is revised to read as follows:

TABLE A–7 TO SUBPART A OF PART 98—DATA ELEMENTS THAT ARE INPUTS TO EMISSION EQUATIONS AND FOR WHICH THE REPORTING DEADLINE IS MARCH 31, 2015

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2015 ("All" means all data elements in the cited paragraph are not required to be reported until March 31, 2015)
A	98.3(d)(3)(v)	All.[a]
C	98.36(b)(9)(iii)	Only estimate of the heat input.[a]
C	98.36(c)(2)(ix)	Only estimate of the heat input from each type of fuel listed in Table C–2.[a]
C	98.36(e)(2)(i)	All.[a]
C	98.36(e)(2)(ii)(A)	All.[a]
C	98.36(e)(2)(ii)(C)	Only HHV value for each calendar month in which HHV determination is required.[a]
C	98.36(e)(2)(ii)(D)	All.[a]
C	98.36(e)(2)(iv)(A)	All.[a]
C	98.36(e)(2)(iv)(C)	All.[a]
C	98.36(e)(2)(iv)(F)	All.[a]
C	98.36(e)(2)(ix)(D)	All.[a]
C	98.36(e)(2)(ix)(E)	All.[a]
C	98.36(e)(2)(ix)(F)	All.[a]
E	98.56(g)	All.
E	98.56(h)	All.
E	98.56(j)(4)	All.
E	98.56(j)(5)	All.
E	98.56(j)(6)	All.
E	98.56(l)	All.
H	98.86(b)(11)	All.
H	98.86(b)(13)	Name of raw kiln feed or raw material.
O	98.156(d)(2)	All.
O	98.156(d)(3)	All.
O	98.156(d)(4)	All.
Q	98.176(f)(1)	All.
W	98.236(c)(1)(i)	All.
W	98.236(c)(1)(ii)	All.
W	98.236(c)(1)(iii)	All.
W	98.236(c)(2)(i)	All.
W	98.236(c)(3)(i)	All.
W	98.236(c)(3)(ii)	Only Calculation Methodology 2.
W	98.236(c)(3)(iii)	All.
W	98.236(c)(3)(iv)	All.
W	98.236(c)(4)(i)(A)	All.
W	98.236(c)(4)(i)(B)	All.
W	98.236(c)(4)(i)(C)	All.
W	98.236(c)(4)(i)(D)	All.
W	98.236(c)(4)(i)(E)	All.
W	98.236(c)(4)(i)(F)	All.
W	98.236(c)(4)(i)(G)	All.
W	98.236(c)(4)(i)(H)	All.
W	98.236(c)(4)(ii)(A)	All.
W	98.236(c)(5)(i)(D)	All.
W	98.236(c)(5)(ii)(C)	All.
W	98.236(c)(6)(i)(B)	All.[b]
W	98.236(c)(6)(i)(D)	All.[b]
W	98.236(c)(6)(i)(E)	All.[b]
W	98.236(c)(6)(i)(F)	All.[b]

TABLE A–7 TO SUBPART A OF PART 98—DATA ELEMENTS THAT ARE INPUTS TO EMISSION EQUATIONS AND FOR WHICH THE REPORTING DEADLINE IS MARCH 31, 2015—Continued

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2015 ("All" means all data elements in the cited paragraph are not required to be reported until March 31, 2015)
W	98.236(c)(6)(i)(G)	Only the amount of natural gas required.
W	98.236(c)(6)(i)(H)	Only the amount of natural gas required.
W	98.236(c)(6)(ii)(A)	All.
W	98.236(c)(6)(ii)(B)	All.
W	98.236(c)(7)(i)(A)	Only for Equation W–14A.
W	98.236(c)(8)(i)(F)	All.[b]
W	98.236(c)(8)(i)(K)	All.
W	98.236(c)(8)(ii)(A)	All.[b]
W	98.236(c)(8)(ii)(H)	All.
W	98.236(c)(8)(iii)(A)	All.
W	98.236(c)(8)(iii)(B)	All.
W	98.236(c)(8)(iii)(G)	All.
W	98.236(c)(12)(ii)	All.
W	98.236(c)(12)(v)	All.
W	98.236(c)(13)(i)(E)	All.
W	98.236(c)(13)(i)(F)	All.
W	98.236(c)(13)(ii)(A)	All.
W	98.236(c)(13)(ii)(B)	All.
W	98.236(c)(13)(iii)(A)	All.
W	98.236(c)(13)(iii)(B)	All.
W	98.236(c)(13)(v)(A)	All.
W	98.236(c)(14)(i)(B)	All.
W	98.236(c)(14)(ii)(A)	All.
W	98.236(c)(14)(ii)(B)	All.
W	98.236(c)(14)(iii)(A)	All.
W	98.236(c)(14)(iii)(B)	All.
W	98.236(c)(14)(v)(A)	All.
W	98.236(c)(15)(ii)(A)	All.
W	98.236(c)(15)(ii)(B)	All.
W	98.236(c)(16)(viii)	All.
W	98.236(c)(16)(ix)	All.
W	98.236(c)(16)(x)	All.
W	98.236(c)(16)(xi)	All.
W	98.236(c)(16)(xii)	All.
W	98.236(c)(16)(xiii)	All.
W	98.236(c)(16)(xiv)	All.
W	98.236(c)(16)(xv)	All.
W	98.236(c)(16)(xvi)	All.
W	98.236(c)(17)(ii)	All.
W	98.236(c)(17)(iii)	All.
W	98.236(c)(17)(iv)	All.
W	98.236(c)(18)(i)	All.
W	98.236(c)(18)(ii)	All.
W	98.236(c)(19)(iv)	All.
W	98.236(c)(19)(vii)	All.
Y	98.256(h)(5)(i)	Only value of the correction.
Y	98.256(k)(4)	Only mole fraction of methane in coking gas.
Y	98.256(n)(3)	All (if used in Equation Y–21 to calculate emissions from equipment leaks).
Y	98.256(o)(4)(vi)	Only tank-specific methane composition data and gas generation rate data.
AA	98.276(e)	All.
CC	98.296(b)(10)(i)	All.
CC	98.296(b)(10)(ii)	All.
CC	98.296(b)(10)(iii)	All.
CC	98.296(b)(10)(iv)	All.
CC	98.296(b)(10)(v)	All.
CC	98.296(b)(10)(vi)	All.
II	98.356(d)(2)	All (if conducting weekly sampling).
II	98.356(d)(3)	All (if conducting weekly sampling).
II	98.356(d)(4)	Only weekly average temperature (if conducting weekly sampling).
II	98.356(d)(5)	Only weekly average moisture content (if conducting weekly sampling).
II	98.356(d)(6)	Only weekly average pressure (if conducting weekly sampling).

[a] Required to be reported only by: (1) Stationary fuel combustion sources (*e.g.,* individual units, aggregations of units, common pipes, or common stacks) subject to subpart C of this part that contain at least one combustion unit connected to a fuel-fired electric generator owned or operated by an entity that is subject to regulation of customer billing rates by the PUC (excluding generators connected to combustion units subject to 40 CFR part 98, subpart D) and that are located at a facility for which the sum of the nameplate capacities for all such electric generators is greater than or equal to 1 megawatt electric output; and (2) stationary fuel combustion sources (*e.g.,* individual units, aggregations of units, common pipes, or common stacks) subject to subpart C of this part that do not meet the criteria in (1) of this footnote that elect to report these data elements, as provided in § 98.36(a), for reporting year 2014.

[b] This rule citation provides an option to delay reporting of this data element for certain wildcat wells and/or delineation wells.

Subpart I—Electronics Manufacturing

■ 8. Section 98.93 is amended by revising paragraph (i)(2) to read as follows:

§ 98.93   Calculating GHG emissions.

*   *   *   *   *

(i) * * *

(2) *Method selection for stack systems in the fab.* If the calculations under paragraph (i)(1) of this section, as well as any subsequent annual measurements and calculations under this subpart, indicate that the stack system meets the criteria in paragraph (i)(2)(i) through (iii) of this section, then you may comply with either paragraph (i)(3) of this section (stack test method) or paragraph (i)(4) of this section (method to estimate emissions from the stack systems that are not tested). If the stack system does not meet all three criteria in paragraph (i)(2)(i) through (iii) of this section, then you must comply with the stack test method specified in paragraph (i)(3) of this section.

*   *   *   *   *

■ 9. Section 98.94 is amended by removing paragraph (j)(5)(ii)(C) and revising paragraph (j)(8)(i) to read as follows:

§ 98.94   Monitoring and QA/QC requirements.

*   *   *   *   *

(j) * * *

(8) * * *

(i) Annual consumption of a fluorinated GHG used during the most recent emissions test (expressed in CO_2e) changes by more than 10 percent of the total annual fluorinated GHG consumption, relative to gas consumption in CO_2e for that gas during the year of the most recent emissions test (for example, if the use of a single gas goes from 25 percent of CO_2e to greater than 35 percent of CO_2e, this change would trigger a re-test).

*   *   *   *   *

■ 10. Section 98.96 is amended by:
■ a. Revising the parameter "GWP_i" of Equation I–26 in paragraph (r) introductory text;
■ b. Revising the parameters "GWP_i" and "GWP_k" of Equation I–27 in paragraph (r)(1);
■ c. Revising the parameters "GWP_i" and "GWP_k" of Equation I–28 in paragraph (r)(2); and
■ d. Revising paragraph (x).
   The revisions read as follows:

§ 98.96   Data reporting requirements.

*   *   *   *   *

(r) * * *

*   *   *   *   *

GWP_i = GWP of emitted fluorinated GHG i from Table A–1 of this part.

*   *   *   *   *

(1) * * *

GWP_i = GWP of emitted fluorinated GHG i from Table A–1 of this part.
GWP_k = GWP of emitted fluorinated GHG by-product k from Table A–1 of this part.

*   *   *   *   *

(2) * * *

GWP_i = GWP of emitted fluorinated GHG i from Table A–1 of this part.
GWP_k = GWP of emitted fluorinated GHG by-product k from Table A–1 of this part.

*   *   *   *   *

(x) If the emissions you report under paragraph (c) of this section include emissions from research and development activities, as defined in § 98.6, report the approximate percentage of total GHG emissions, on a metric ton CO_2e basis, that are attributable to research and development activities, using the following ranges: less than 5 percent, 5 percent to less than 10 percent, 10 percent to less than 25 percent, 25 percent to less than 50 percent, 50 percent and higher.

*   *   *   *   *

Subpart L—Fluorinated Gas Production

■ 11. Section 98.122 is amended by revising paragraph (c) and adding paragraphs (d), (e) and (f) to read as follows:

§ 98.122   GHGs to report.

*   *   *   *   *

(c) *Emissions from production and transformation processes, process level.* You must report, for each fluorinated GHG group, the total GWP-weighted mass of all fluorinated GHGs in that group (in metric tons CO_2e) emitted from:

(1) Each fluorinated gas production process.

(2) Each fluorinated gas transformation process that is not part of a fluorinated gas production process and where no fluorinated GHG reactant is produced at another facility.

(3) Each fluorinated gas transformation process that is not part of a fluorinated gas production process and where one or more fluorinated GHG reactants are produced at another facility.

(d) *Emissions from production and transformation processes, facility level, multiple products.* If your facility produces more than one fluorinated gas product, you must report the emissions

(in metric tons) from production and transformation processes, totaled across the facility as a whole, of each fluorinated GHG that is emitted in quantities of 1,000 metric tons of CO_2e or more from production or transformation processes, totaled across the facility as a whole. Aggregate and report emissions of all other fluorinated GHGs from production and transformation processes by fluorinated GHG group for the facility as a whole, in metric tons of CO_2e.

(e) *Emissions from production and transformation processes, facility level, one product only.* If your facility produces only one fluorinated gas product, aggregate and report the GWP-weighted emissions from production and transformation processes of fluorinated GHGs by fluorinated GHG group for the facility as a whole, in metric tons CO_2e, with the following exception: Where emissions consist of a major fluorinated GHG constituent of a fluorinated gas product, and the product is sold or transferred to another person, report the total mass of each fluorinated GHG that is emitted from production and transformation processes and that is a major fluorinated GHG constituent of the product (in metric tons).

(f) *Emissions from destruction processes and venting of containers.* You must report the total mass of each fluorinated GHG emitted (in metric tons) from:

(1) Each fluorinated gas destruction process that is not part of a fluorinated gas production process or a fluorinated gas transformation process and all such fluorinated gas destruction processes combined.

(2) Venting of residual fluorinated GHGs from containers returned from the field.

■ 12. Section 98.123 is amended by:
■ a. Revising the introductory text;
■ b. Removing and reserving paragraph (a);
■ c. Revising paragraph (b);
■ d. Revising paragraph (c)(1)(v);
■ e. Removing and reserving paragraph (c)(1)(vi);
■ f. Redesignating paragraphs (e)(i) and (e)(ii) as paragraphs (e)(1) and (e)(2), respectively;
■ g. Revising paragraphs (g)(1), (g)(2)(ii), and (g)(2)(iv); and
■ h. Adding paragraph (h).
   The revisions and additions read as follows:

§ 98.123   Calculating GHG emissions.

For fluorinated gas production and transformation processes, you must calculate the fluorinated GHG emissions from each process using the emission

factor or emission calculation factor method specified in paragraphs (c), (d), and (e) of this section, as appropriate. For destruction processes that destroy fluorinated GHGs that were previously "produced" as defined at § 98.410(b), you must calculate emissions using the procedures in paragraph (f) of this section. For venting of residual gas from containers (*e.g.,* cylinder heels), you must calculate emissions using the procedures in paragraph (g) of this section.

(a) [Reserved]

(b) *Mass balance method.* The mass balance method was available for reporting years 2011, 2012, 2013, and 2014 only. See paragraph 1 of Appendix A of this subpart for the former mass balance method.

(c) * * *

(1) * * *

(v) *GWPs.* To convert the fluorinated GHG emissions to CO_2e, use Equation A–1 of § 98.2.

(vi) [Reserved]

*   *   *   *   *

(g) * * *

(1) *Measuring contents of each container.* If you weigh or otherwise measure the contents of each container before venting the residual fluorinated GHGs, use Equation L–32 of this section to calculate annual emissions of each fluorinated GHG from venting of residual fluorinated GHG from containers. Convert pressures to masses as directed in paragraph (g)(2)(ii) of this section.

$$E_{Cf} = \sum_{1}^{n} H_{Bfj} - \sum_{1}^{n} H_{Efj}$$

(Eq. L-32)

Where:

E_{Cf} = Total mass of each fluorinated GHG f emitted from the facility through venting of residual fluorinated GHG from containers, annual basis (metric tons/year).

H_{Bfj} = Mass of residual fluorinated GHG f in container j when received by facility (metric tons).

H_{Efj} = Mass of residual fluorinated GHG f in container j after evacuation by facility (metric tons). (Facility may equate to zero.)

n = Number of vented containers for each fluorinated GHG f.

(2) * * *

(ii) *Measurement of residual gas.* The residual weight or pressure you use for

paragraph (g)(1) of this section must be determined by monitoring the mass or the pressure of your cylinders/containers according to § 98.124(k). If you monitor the pressure, convert the pressure to mass using a form of the ideal gas law, as displayed in Equation L–33 of this section, with an appropriately selected Z value.

$$m_R = \frac{p * V * MW}{Z * R * T * 10^6}$$

(Eq. L-33)

Where:

m_R = Mass of residual gas in the container (metric ton).

p = Absolute pressure of the gas (Pa).

V = Volume of the gas (m^3).

MW = Molecular weight of the fluorinated GHG f (g/gmole).

Z = Compressibility factor.

R = Gas constant (8.314 Pa m^3/Kelvin mole).

T = Absolute temperature (K).

10^6 = Conversion factor (10^6 g/metric ton).

*   *   *   *   *

(iv) Calculate annual emissions of each fluorinated GHG from venting of residual fluorinated GHG from containers using Equation L–34 of this section.

$$E_{Cf} = \sum_{j=1}^{n} h_{fj} * N_{fj} * F_{fj}$$

(Eq. L-34)

Where:

E_{Cf} = Total mass of each fluorinated GHG f emitted from the facility through venting of residual fluorinated GHG from containers, annual basis (metric tons/year).

h_{fj} = Facility-wide gas-specific heel factor for fluorinated GHG f (fraction) and

container size and type j, as determined in paragraph (g)(2)(iii) of this section.

N_{fj} = Number of containers of size and type j returned to the fluorinated gas production facility.

F_{fj} = Full capacity of containers of size and type j containing fluorinated GHG f (metric tons).

n = Number of combinations of container sizes and types for fluorinated GHG f.

(h) *Effective destruction efficiency for each process.* If you used the emission factor or emission calculation factor method to calculate emissions from the process, use Equation L–35 to calculate the effective destruction efficiency for the process, including each process vent:

$$DE_{Effective} = 1 - \frac{\sum_{1}^{w} \left(\sum_{1}^{o} \sum_{1}^{v} E_{PVf} \right) \times GWP_f}{\sum_{1}^{w} \left(\sum_{1}^{o} \sum_{1}^{v} ECF_{PV-Uf} \times \left(Activity_U + Activity_C \right) \right) \times GWP_f + \sum_{1}^{w} \left(\sum_{1}^{o} \sum_{1}^{v} EF_{PV-Uf} \times \left(Activity_U + Activity_C \right) \right) \times GWP_f}$$

(Eq. L-35)

Where:

$DE_{Effective}$ = Effective destruction efficiency for process i (fraction).

E_{PVf} = Mass of fluorinated GHG f emitted from process vent v from process i, operating scenario j, for the year, calculated in Equation L–21, L–22, L–26, or L–27 of this section (kg).

GWP_f = Global warming potential for each greenhouse gas from Table A–1 of subpart A of this part.

ECF_{PV-Uf} = Emission calculation factor for fluorinated GHG f emitted from process vent v during process i, operating scenario j during periods when the process vent is not vented to the properly functioning destruction device, as used in Equation L–21; or emission calculation factor for fluorinated GHG f emitted from process vent v during process i, operating scenario j, as used in Equation L–26 or L–27 (kg emitted/ activity) (*e.g.,* kg emitted/kg product), denoted as ''ECF_{PV}'' in those equations.

EF_{PV-Uf} = Emission factor (uncontrolled) for fluorinated GHG f emitted from process vent v during process i, operating scenario j, as used in Equation L–22 (kg emitted/activity) (*e.g.,* kg emitted/kg product), denoted as ''EF_{PV-U}'' in that equation.

$Activity_U$ = Total process feed, process production, or other process activity for process i, operating scenario j during the year, for which the process vent is not vented to the properly functioning destruction device (*i.e.,* uncontrolled).

$Activity_C$ = Total process feed, process production, or other process activity for process i, operating scenario j during the year, for which emissions are vented to the properly functioning destruction device (*i.e.,* controlled).

o = Number of operating scenarios for process i.

v = Number of process vents in process i, operating scenario j.

w = Number of fluorinated GHGs emitted from the process.

■ 5. Section 98.124 is amended by revising paragraphs (b) and (c)(1), (2) and (5) and redesignating paragraphs (c)(7) through (9) as paragraphs (c)(6) through (8).

The revisions read as follows:

§ 98.124 Monitoring and QA/QC requirements.

* * * * *

(b) *Mass balance monitoring.* Mass balance monitoring was available for reporting years 2011, 2012, 2013, and 2014 only. See paragraph 2 of Appendix A of this subpart for the former mass balance method.

(c) * * *

(1) *Process vent testing.* Conduct an emissions test that is based on representative performance of the process or operating scenario(s) of the process, as applicable. For process vents for which you performed an initial scoping speciation, include in the

emission test any fluorinated GHG that was identified in the initial scoping speciation. For process vents for which you did not perform an initial scoping speciation, include in the emission test any fluorinated greenhouse gas that occurs in more than trace concentrations in the vent stream or, where a destruction device is used, in the inlet to the destruction device. You may include startup and shutdown events if the testing is sufficiently long or comprehensive to ensure that such events are not overrepresented in the emission factor. Malfunction events must not be included in the testing. If you do not detect a fluorinated GHG that was identified in the scoping speciation or that occurs in more than trace concentrations in the vent stream or in the inlet to the destruction device, assume that fluorinated GHG was emitted at one half of the detection limit.

(2) *Number of runs.* For continuous processes, sample the process vent for a minimum of three runs of 1 hour each. If the relative standard deviation (RSD) of the emission factor calculated based on the first three runs is greater than or equal to 0.15 for the emission factor, continue to sample the process vent for an additional three runs of 1 hour each. If more than one fluorinated GHG is measured, the RSD must be expressed in terms of total CO_2e.

* * * * *

(5) *Emission test results.* The results of an emission test must include the analysis of samples, number of test runs, the results of the RSD analysis, the analytical method used, determination of emissions, the process activity, and raw data and must identify the process, the operating scenario, the process vents tested, and the fluorinated GHGs that were included in the test. The emissions test report must contain all information and data used to derive the process-vent-specific emission factor, as well as key process conditions during the test. Key process conditions include those that are normally monitored for process control purposes and may include but are not limited to yields, pressures, temperatures, etc. (*e.g.,* of reactor vessels, distillation columns).

* * * * *

■ 6. Section 98.126 is amended by:
■ a. Revising paragraphs (a) through (e);
■ b. Removing and reserving paragraphs (f)(1), (f)(5), and (g)(1);
■ c. Revising paragraphs (g)(2) and (h)(1);
■ d. Removing and reserving paragraph (h)(2); and
■ e. Adding paragraph (k).

The revisions and additions read as follows:

§ 98.126 Data reporting requirements.

(a) *All facilities.* In addition to the information required by § 98.3(c), you must report the information in paragraphs (a)(2) through (6) of this section according to the schedule in paragraph (a)(1) of this section, except as otherwise provided in paragraph (j) of this section or in § 98.3(c)(4)(vii) and Table A–7 of subpart A of this part.

(1) *Frequency of reporting under paragraph (a) of this section.* The information in paragraphs (a)(2) through (6) of this section must be reported annually.

(2) *Generically-identified process.* For each production and transformation process at the facility, you must:

(i) Provide a number, letter, or other identifier for the process. This identifier must be consistent from year to year.

(ii) Indicate whether the process is a fluorinated gas production process, a fluorinated gas transformation process where no fluorinated GHG reactant is produced at another facility, or a fluorinated gas transformation process where one or more fluorinated GHG reactants are produced at another facility.

(iii) Indicate whether the process could be characterized as reaction, distillation, or packaging (include all that apply).

(iv) For each generically-identified process and each fluorinated GHG group, report the method(s) used to determine the mass emissions of that fluorinated GHG group from that process from vents (*i.e.,* mass balance (for reporting years 2011, 2012, 2013, and 2014 only), process-vent-specific emission factor, or process-vent-specific emission calculation factor).

(v) For each generically-identified process and each fluorinated GHG group, report the method(s) used to determine the mass emissions of that fluorinated GHG group from that process from equipment leaks, unless you used the mass balance method (for reporting years 2011, 2012, 2013, and 2014 only) for that process.

(3) *Emissions from production and transformation processes, process level, multiple products.* If your facility produces more than one fluorinated gas product, for each generically-identified process and each fluorinated GHG group, you must report the total GWP-weighted emissions of all fluorinated GHGs in that group from the process, in metric tons CO_2e.

(4) *Emissions from production and transformation processes, facility level, multiple products.* If your facility

produces more than one fluorinated gas product, you must report the information in paragraphs (a)(4)(i) and (ii) of this section, as applicable, for emissions from production and transformation processes.

(i) For each fluorinated GHG with emissions of 1,000 metric tons of CO_2e or more from production and transformation processes, summed across the facility as a whole, you must report the total mass in metric tons of the fluorinated GHG emitted from production and transformation processes, summed across the facility as a whole. If the fluorinated GHG does not have a chemical-specific GWP in Table A–1 of subpart A, identify the fluorinated GHG group of which that fluorinated GHG is a member.

(ii) For all other fluorinated GHGs emitted from production and transformation processes, you must report the total GWP-weighted emissions from production and transformation processes of those fluorinated GHGs by fluorinated GHG group, summed across the facility as a whole, in metric tons of CO_2e.

(5) *Emissions from production and transformation processes, facility level, one product only.* If your facility produces only one fluorinated gas product, aggregate and report the total GWP-weighted emissions from production and transformation processes of fluorinated GHGs by fluorinated GHG group for the facility as a whole, in metric tons of CO_2e, with the following exception: Where emissions consist of a major fluorinated GHG constituent of a fluorinated gas product, and the product is sold or transferred to another person, report the total mass in metric tons of each fluorinated GHG that is emitted from production and transformation processes and that is a major fluorinated GHG constituent of the product. If the fluorinated GHG does not have a chemical-specific GWP in Table A–1 of subpart A, identify the fluorinated GHG group of which that fluorinated GHG is a member.

(6) *Effective destruction efficiency.* For each generically-identified process, use Table L–1 of this subpart to report the range that encompasses the effective destruction efficiency, $DE_{effective}$, calculated for that process using Equation L–35 of this subpart. The effective destruction efficiency must be reported on a CO_2e basis.

(b) *Reporting for mass balance method for reporting years 2011, 2012, 2013, and 2014.* If you used the mass balance method to calculate emissions for any of the reporting years 2011, 2012, 2013, or 2014, you must conduct

mass balance reporting for that reporting year. For processes whose emissions were determined using the mass balance method under the former § 98.123(b), as included in paragraph 1 of Appendix A of this subpart, you must report the information listed in paragraphs (b)(1) and (b)(2) of this section for each process on an annual basis.

(1) If you calculated the relative and absolute errors under the former § 98.123(b)(1), the overall absolute and relative errors calculated for the process under the former § 98.123(b)(1), in metric tons CO_2e and decimal fraction, respectively.

(2) The method used to estimate the total mass of fluorine in destroyed or recaptured streams (specify the former § 98.123(b)(4) or (15), as included in paragraph 1 of Appendix A of this subpart).

(c) *Reporting for emission factor and emission calculation factor approach.* For processes whose emissions are determined using the emission factor approach under § 98.123(c)(3) or the emission calculation factor under § 98.123(c)(4), you must report the following for each generically-identified process.

(1) [Reserved]

(2) [Reserved]

(3) For each fluorinated GHG group, the total GWP-weighted mass of all fluorinated GHGs in that group emitted from all process vents combined, in metric tons of CO_2e.

(4) For each fluorinated GHG group, the total GWP-weighted mass of all fluorinated GHGs in that group emitted from equipment leaks, in metric tons of CO_2e.

(d) *Reporting for missing data.* Where missing data have been estimated pursuant to § 98.125, you must report:

(1) The generically-identified process for which the data were missing.

(2) The reason the data were missing, the length of time the data were missing, and the method used to estimate the missing data.

(3) Estimates of the missing data for all missing data associated with data elements required to be reported in this section.

(e) *Reporting of destruction device excess emissions data.* Each fluorinated gas production facility that destroys fluorinated GHGs must report the excess emissions that result from malfunctions of the destruction device, and these excess emissions must be reflected in the fluorinated GHG estimates in the former § 98.123(b) as included in paragraph 1 of Appendix A of this subpart for the former mass balance method, and in § 98.123(c). Such excess emissions would occur if the

destruction efficiency was reduced due to the malfunction.

*   *   *   *   *

(g) * * *

(2) The mass of the fluorinated GHG emitted from the destruction device (metric tons).

(h) * * *

(1) The mass of the residual fluorinated GHG vented from containers annually (metric tons).

*   *   *   *   *

(k) *Submission of complete reporting year 2011, 2012, and 2013 GHG reports.* By March 31, 2015, you must submit annual GHG reports for reporting years 2011, 2012, and 2013 that contain the information specified in paragraphs (a) through (i) of this section. The reports must calculate CO_2e using the GWPs in Table A–1 of subpart A of this part (as in effect on January 1, 2015). Prior submission of partial reports for these reporting years under paragraph (j) of this section does not affect your obligation to submit complete reports under this paragraph.

■ 7. Section 98.127 is amended by:
■ a. Revising the introductory text;
■ b. Revising paragraphs (a)(1) and (2);
■ c. Adding paragraphs (a)(3) and (4);
■ d. Revising paragraph (b);
■ e. Revising paragraph (c) introductory text and paragraph (c)(3); and
■ f. Adding paragraph (l).

The revisions and additions read as follows:

§ 98.127 Records that must be retained.

In addition to the records required by § 98.3(g), you must retain the dated records specified in paragraphs (a) through (l) of this section, as applicable.

(a) * * *

(1) Identify all products and processes subject to this subpart. Include the unit identification as appropriate, the generic process identification reported for the process under § 98.126(a)(2)(i) through (iii), and the product with which the process is associated.

(2) Monthly and annual records, as applicable, of all analyses and calculations conducted as required under § 98.123, including the data monitored under § 98.124, and all information reported as required under § 98.126.

(3) Identify all fluorinated GHGs with emissions of 1,000 metric tons CO_2e or more from production and transformation processes, summed across the facility as a whole, and identify all fluorinated GHGs with total emissions less than 1,000 metric tons CO_2e from production and transformation processes, summed across the facility as a whole.

(4) Calculations used to determine the total GWP-weighted emissions of fluorinated GHGs by fluorinated GHG group for each process, in metric tons CO_2e.

(b) *Scoping speciation.* Retain records documenting the information collected under § 98.124(a).

(c) *Mass balance method.* Retain the following records for each process for which the mass balance method was used to estimate emissions in reporting years 2011, 2012, 2013, or 2014. If you used an element other than fluorine in the mass balance equation pursuant to the former § 98.123(b)(3) as included in paragraph 1 of Appendix A of this subpart for the former mass balance method, substitute that element for fluorine in the recordkeeping requirements of this paragraph.

* * * * *

(3) The data and calculations used to determine the fractions of the mass emitted consisting of each reactant (FER_d), product (FEP), and by-product (FEB_k), including the preliminary calculations in the former § 98.123(b)(8)(i).

* * * * *

(l) *Verification software records.* For reporting year 2015 and thereafter, you must enter into verification software specified in § 98.5(b) the data specified in paragraphs (l)(1) through (15) of this section. The data specified in paragraphs (l)(1) through (11) must be entered for each process and each process vent, as applicable. The data specified in paragraphs (l)(1) through (15) must be entered for each fluorinated GHG, as applicable. You must keep a record of the file generated by the verification software specified in § 98.5(b) for the applicable data specified in paragraphs (l)(1) through (15) of this section. Retention of this file satisfies the recordkeeping requirement for the data in paragraphs (l)(1) through (15) of this section.

(1) The identity of the process vent (*e.g.,* name or number assigned by the facility).

(2) The equation used to estimate emissions from the process vent (Equations L–21, L–22, L–26, or L–27).

(3) The type of process activity used to estimate emissions from the process vent (*e.g.,* product of process or reactant consumed by process) (Activity, $Activity_C$, or $Activity_U$) (Equations L–21, L–22, L–26, L–27, L–35).

(4) The quantities of the process activity used to estimate controlled and uncontrolled emissions, respectively, for the process vent, Activity, $Activity_U$, or $Activity_C$, (*e.g.* kg product) (Equations L–21, L–22, L–26, L–27, L–35).

(5) The site-specific, process-vent-specific emission factor, EF_{PV-C}, for the process vent, measured after the destruction device (kg fluorinated GHG emitted per kg activity) (Equation L–21).

(6) The site-specific, process-vent-specific emission calculation factor, ECF_{PV-U}, for the process vent, for periods not vented to destruction device (kg fluorinated GHG emitted per kg activity) (Equations L–21, L–35).

(7) The site-specific, process-vent-specific emission factor(s), EF_{PV-U}, for the process vent, measured before the destruction device (kg fluorinated GHG emitted per kg activity) (Equations L–22, L–35).

(8) The site-specific, process-vent-specific emission calculation factor for the process vent, ECF_{PV} (kg fluorinated GHG emitted per kg of activity) (Equations L–26, L–27, L–35).

(9) Destruction efficiency, DE, of each destruction device for each fluorinated GHG whose destruction the facility reflects in § 98.123, in accordance with § 98.124(g)(1)(i) through (iv) (weight fraction) (Equations L–22, L–27, L–31).

(10) Emissions of each fluorinated GHG for equipment pieces for the process, E_{ELf} (metric ton/yr) (98.123(d)(3)).

(11) The mass of the fluorinated GHG previously produced and fed into the destruction device, RE_D, (metric tons) (Equation L–31).

(12) If applicable, the heel factor, h_{fj}, calculated for each container size and type (decimal fraction) (Equation L–34).

(13) If applicable, the number of containers of size and type j returned to the fluorinated gas production facility, N_{fj}, (Equation L–34).

(14) If applicable, the full capacity of containers of size and type j containing fluorinated GHG f, F_{fj}, (metric tons) (Equation L–34).

(15) For fluorinated GHGs that do not have a chemical-specific GWP on Table A–1 of subpart A of this part, the fluorinated GHG group of which the fluorinated GHG is a member, as applicable (to permit look-up of global warming potential, GWP_f, or GWP_i, for that fluorinated GHG in Table A–1 of subpart A of this part (Equation A–1 of subpart A of this part, Equation L–35)).

■ 8. Section 98.128 is amended by adding, in alphabetical order, definitions for ''Fluorinated gas product,'' ''Generically-identified process,'' and ''Major fluorinated GHG constituent'' to read as follows:

§ 98.128 Definitions.

* * * * *

Fluorinated gas product means the product of the process, including isolated intermediates.

* * * * *

Generically-identified process means a process that is:

(1) Identified as a production process, a transformation process where no fluorinated GHG reactant is produced at another facility, or a transformation process where one or more fluorinated GHG reactants are produced at another facility;

(2) Further identified as a reaction, distillation, or packaging process, or a combination thereof; and

(3) Tagged with a discrete identifier, such as a letter or number, that remains constant from year to year.

* * * * *

Major fluorinated GHG constituent means a fluorinated GHG constituent of a fluorinated gas product that occurs in concentrations greater than 1 percent by mass.

* * * * *

■ 9. Add table L–1 to subpart L to read as follows:

TABLE L–1 OF SUBPART L OF PART 98—RANGES OF EFFECTIVE DE-STRUCTION EFFICIENCY

Range of Reductions
≥99%.
≥95% to <99%.
≥75% to <95%.
≥0% to <75%.

■ 10. Add Appendix A to subpart L to read as follows:

Appendix A to Subpart L of Part 98—Mass Balance Method for Fluorinated Gas Production

1. *Mass Balance Method for § 98.123(b).* [Note: Numbering convention here matches original rule text, 75 FR 74774, December 1, 2010.]

(b) *Mass balance method.* Before using the mass balance approach to estimate your fluorinated GHG emissions from a process, you must ensure that the process and the equipment and methods used to measure it meet either the error limits described in this paragraph and calculated under paragraph (b)(1) of this section or the requirements specified in paragraph § 98.124(b)(8). If you choose to calculate the error limits, you must estimate the absolute and relative errors associated with using the mass balance approach on that process using Equations L–1 through L–4 of this section in conjunction with Equations L–5 through L–10 of this section. You may use the mass-balance approach to estimate emissions from the process if this calculation results in an absolute error of less than or equal to 3,000 metric tons CO_2e per year or a relative error of less than or equal to 30 percent of the

estimated CO_2e fluorinated GHG emissions. If you do not meet either of the error limits or the requirements of paragraph § 98.124(b)(8), you must use the emission factor approach detailed in paragraphs (c), (d), and (e) of this section to estimate emissions from the process.

(1) *Error calculation.* To perform the calculation, you must first calculate the absolute and relative errors associated with the quantities calculated using either Equations L–7 through L–10 of this section or Equation L–17 of this section. Alternatively, you may estimate these errors based on the variability of previous process measurements (*e.g.,* the variability of measurements of stream concentrations), provided these measurements are representative of the current process and current measurement devices and

techniques. Once errors have been calculated for the quantities in these equations, those errors must be used to calculate the errors in Equations L–6 and L–5 of this section. You may ignore the errors associated with Equations L–11, L–12, and L–13 of this section.

(i) Where the measured quantity is a mass, the error in the mass must be equated to the accuracy or precision (whichever is larger) of the flowmeter, scale, or combination of volumetric and density measurements at the flow rate or mass measured.

(ii) Where the measured quantity is a concentration of a stream component, the error of the concentration must be equated to the accuracy or precision (whichever is larger) with which you estimate the mean concentration of that stream component, accounting for the variability of the process,

the frequency of the measurements, and the accuracy or precision (whichever is larger) of the analytical technique used to measure the concentration at the concentration measured. If the variability of process measurements is used to estimate the error, this variability shall be assumed to account both for the variability of the process and the precision of the analytical technique. Use standard statistical techniques such as the student's t distribution to estimate the error of the mean of the concentration measurements as a function of process variability and frequency of measurement.

(iii) Equation L–1 of this section provides the general formula for calculating the absolute errors of sums and differences where the sum, S, is the summation of variables measured, a, b, c, etc. (*e.g.,* S = a + b + c):

$$e_{SA} = \left[\left(a * e_a \right)^2 + \left(b * e_b \right)^2 + \left(c * e_c \right)^2 \right]^{1/2}$$

(Eq. L-1)

Where:

e_{SA} = Absolute error of the sum, expressed as one half of a 95 percent confidence interval.

e_a = Relative error of a, expressed as one half of a 95 percent confidence interval.
e_b = Relative error of b, expressed as one half of a 95 percent confidence interval.

e_c = Relative error of c, expressed as one half of a 95 percent confidence interval.

(iv) Equation L–2 of this section provides the general formula for calculating the relative errors of sums and differences:

$$e_{SR} = \frac{e_{SA}}{\left(a + b + c \right)}$$

(Eq. L-2)

Where:

e_{SR} = Relative error of the sum, expressed as one half of a 95 percent confidence interval.

e_{SA} = Absolute error of the sum, expressed as one half of a 95 percent confidence interval.
a+b+c = Sum of the variables measured.

(v) Equation L–3 of this section provides the general formula for calculating the

absolute errors of products (*e.g.,* flow rates of GHGs calculated as the product of the flow rate of the stream and the concentration of the GHG in the stream), where the product, P, is the result of multiplying the variables measured, a, b, c, etc. (*e.g.,* P = a*b*c):

$$e_{PA} = \left(a * b * c \right) \left(e_a^2 + e_b^2 + e_c^2 \right)^{1/2}$$

(Eq. L-3)

Where:

e_{PA} = Absolute error of the product, expressed as one half of a 95 percent confidence interval.

e_a = Relative error of a, expressed as one half of a 95 percent confidence interval.
e_b = Relative error of b, expressed as one half of a 95 percent confidence interval.

e_c = Relative error of c, expressed as one half of a 95 percent confidence interval.

(vi) Equation L–4 of this section provides the general formula for calculating the relative errors of products:

$$e_{PR} = \frac{e_{PA}}{\left(a * b * c \right)}$$

(Eq. L-4)

Where:

e_{PR} = Relative error of the product, expressed as one half of a 95 percent confidence interval.
e_{PA} = Absolute error of the product, expressed as one half of a 95 percent confidence interval.
a*b*c = Product of the variables measured.

(vii) Calculate the absolute error of the emissions estimate in terms of CO_2e by performing a preliminary estimate of the

annual CO_2e emissions of the process using the method in paragraph (b)(1)(viii) of this section. Multiply this result by the relative error calculated for the mass of fluorine emitted from the process in Equation L–6 of this section.

(viii) To estimate the annual CO_2e emissions of the process for use in the error estimate, apply the methods set forth in paragraphs (b)(2) through (7) and (b)(9) through (16) of this section to representative process measurements. If these process

measurements represent less than one year of typical process activity, adjust the estimated emissions to account for one year of typical process activity. To estimate the terms FER_d, FEP, and FEB_k for use in the error estimate for Equations L–11, L–12, and L–13 of this section, you must either use emission testing, monitoring of emitted streams, and/or engineering calculations or assessments, or in the alternative assume that all fluorine is emitted in the form of the fluorinated GHG that has the highest GWP among the

fluorinated GHGs that occur in more than trace concentrations in the process. To convert the fluorinated GHG emissions to CO_2e, use Equation A–1 of § 98.2. For fluorinated GHGs whose GWPs are not listed in Table A–1 to subpart A of this part, use a default GWP of 2,000.

(2) The total mass of each fluorinated GHG emitted annually from each fluorinated gas production and each fluorinated GHG transformation process must be estimated by using Equation L–5 of this section.

$$E_{FGHGf} = \sum_{p=1}^{n} (E_{Rp-FGHGf} + E_{Pp-FGHGf} + E_{Bp-FGHGf})$$

(Eq. L-5)

Where:

E_{FGHGf} = Total mass of each fluorinated GHG f emitted annually from production or transformation process i (metric tons).

$E_{Rp-FGHGf}$ = Total mass of fluorinated GHG reactant f emitted from production process i over the period p (metric tons, calculated in Equation L–11 of this section).

$E_{Pp-FGHGf}$ = Total mass of the fluorinated GHG product f emitted from production process i over the period p (metric tons, calculated in Equation L–12 of this section).

$E_{Bp-FGHGf}$ = Total mass of fluorinated GHG by-product f emitted from production process i over the period p (metric tons, calculated in Equation L–13 of this section).

n = Number of concentration and flow measurement periods for the year.

(3) The total mass of fluorine emitted from process i over the period p must be estimated at least monthly by calculating the difference between the total mass of fluorine in the reactant(s) (or inputs, for processes that do not involve a chemical reaction) and the total mass of fluorine in the product (or outputs, for processes that do not involve a chemical reaction), accounting for the total mass of fluorine in any destroyed or recaptured streams that contain reactants, products, or by-products (or inputs or outputs). This calculation must be performed using Equation L–6 of this section. An element other than fluorine may be used in the mass-balance equation, provided the element occurs in all of the fluorinated GHGs fed into or generated by the process. In this case, the mass fractions of the element in the reactants, products, and by-products must be calculated as appropriate for that element.

$$E_F = \sum_{1}^{v} (R_d * MFF_{Rd}) - P * MFF_P - F_D$$

(Eq. L-6)

Where:

E_F = Total mass of fluorine emitted from process i over the period p (metric tons).

R_d = Total mass of the fluorine-containing reactant d that is fed into process i over the period p (metric tons).

P = Total mass of the fluorine-containing product produced by process i over the period p (metric tons).

MFF_{Rd} = Mass fraction of fluorine in reactant d, calculated in Equation L–14 of this section.

MFF_P = Mass fraction of fluorine in the product, calculated in Equation L–15 of this section.

F_D = Total mass of fluorine in destroyed or recaptured streams from process i containing fluorine-containing reactants, products, and by-products over the period p, calculated in Equation L–7 of this section.

v = Number of fluorine-containing reactants fed into process i.

(4) The mass of total fluorine in destroyed or recaptured streams containing fluorine-containing reactants, products, and by-products must be estimated at least monthly using Equation L–7 of this section unless you use the alternative approach provided in paragraph (b)(15) of this section.

$$F_D = \sum_{j=1}^{q} P_j * MFF_P + \sum_{k=1}^{u} \left[\left(\sum_{j=1}^{q} B_{kj} + \sum_{l=1}^{x} B_{kl} \right) * MFF_{Bk} \right] + \sum_{d=1}^{v} \left(\sum_{j=1}^{q} R_{dj} * MFF_{Rd} \right)$$

(Eq. L-7)

Where:

F_D = Total mass of fluorine in destroyed or recaptured streams from process i containing fluorine-containing reactants, products, and by-products over the period p.

P_j = Mass of the fluorine-containing product removed from process i in stream j and destroyed over the period p (calculated in Equation L–8 or L–9 of this section).

B_{kj} = Mass of fluorine-containing by-product k removed from process i in stream j and destroyed over the period p (calculated in Equation L–8 or L–9 of this section).

B_{kl} = Mass of fluorine-containing by-product k removed from process i in stream l and recaptured over the period p.

R_{dj} = Mass of fluorine-containing reactant d removed from process i in stream j and destroyed over the period p (calculated in Equation L–8 or L–9 of this section).

MFF_{Rd} = Mass fraction of fluorine in reactant d, calculated in Equation L–14 of this section.

MFF_P = Mass fraction of fluorine in the product, calculated in Equation L–15 of this section.

MFF_{Bk} = Mass fraction of fluorine in by-product k, calculated in Equation L–16 of this section.

q = Number of streams destroyed in process i.

x = Number of streams recaptured in process i.

u = Number of fluorine-containing by-products generated in process i.

v = Number of fluorine-containing reactants fed into process i.

(5) The mass of each fluorinated GHG removed from process i in stream j and destroyed over the period p (*i.e.,* P_j, B_{kj}, or R_{dj}, as applicable) must be estimated by applying the destruction efficiency (DE) of the device that has been demonstrated for the fluorinated GHG f to fluorinated GHG f using Equation L–8 of this section:

$$M_{FGHGfj} = DE_{FGHGf} * c_{FGHGfj} * S_j$$

(Eq. L-8)

Where:

M_{FGHGfj} = Mass of fluorinated GHG f removed from process i in stream j and destroyed over the period p. (This may be P_j, B_{kj}, or R_{dj}, as applicable.)

DE_{FGHGf} = Destruction efficiency of the device that has been demonstrated for fluorinated GHG f in stream j (fraction).

C_{FGHGfj} = Concentration (mass fraction) of fluorinated GHG f in stream j removed from process i and fed into the destruction device over the period p. If this concentration is only a trace concentration, $c_{F-GHGfj}$ is equal to zero.

S_j = Mass removed in stream j from process i and fed into the destruction device over the period p (metric tons).

(6) The mass of each fluorine-containing compound that is not a fluorinated GHG and that is removed from process i in stream j and destroyed over the period p (*i.e.,* P_j, B_{kj}, or R_{dj}, as applicable) must be estimated using Equation L–9 of this section.

$$M_{FCgj} = c_{FCgj} * S_j \qquad \text{(Eq. L-9)}$$

Where:

M_{FCgj} = Mass of non-GHG fluorine-containing compound g removed from process i in stream j and destroyed over the period p. (This may be P_j, B_{kj}, or R_{dj}, as applicable).

c_{FCgj} = Concentration (mass fraction) of non-GHG fluorine-containing compound g in

stream j removed from process i and fed into the destruction device over the period p. If this concentration is only a trace concentration, c_{FCgj} is equal to zero.

S_j = Mass removed in stream j from process i and fed into the destruction device over the period p (metric tons).

(7) The mass of fluorine-containing by-product k removed from process i in stream l and recaptured over the period p must be estimated using Equation L–10 of this section:

$$B_{kl} = c_{Bkl} * S_l \qquad \text{(Eq. L-10)}$$

Where:

B_{kl} = Mass of fluorine-containing by-product k removed from process i in stream l and recaptured over the period p (metric tons).

c_{Bkl} = Concentration (mass fraction) of fluorine-containing by-product k in stream l removed from process i and recaptured over the period p. If this concentration is only a trace concentration, c_{Bkl} is equal to zero.

S_l = Mass removed in stream l from process i and recaptured over the period p (metric tons).

(8) To estimate the terms FER_d, FEP, and FEB_k for Equations L–11, L–12, and L–13 of this section, you must assume that the total mass of fluorine emitted, E_F, estimated in Equation L–6 of this section, occurs in the form of the fluorinated GHG that has the highest GWP among the fluorinated GHGs that occur in more than trace concentrations in the process unless you possess emission

characterization measurements showing otherwise. These emission characterization measurements must meet the requirements in paragraph (8)(i), (ii), or (iii) of this section, as appropriate. The sum of the terms must equal 1. You must document the data and calculations that are used to speciate individual compounds and to estimate FER_d, FEP, and FEB_k. Exclude from your calculations the fluorine included in F_D. For example, exclude fluorine-containing compounds that are not fluorinated GHGs and that result from the destruction of fluorinated GHGs by any destruction devices (*e.g.,* the mass of HF created by combustion of an HFC). However, include emissions of fluorinated GHGs that survive the destruction process.

(i) If the calculations under paragraph (b)(1)(viii) of this section, or any subsequent measurements and calculations under this subpart, indicate that the process emits 25,000 metric tons CO_2e or more, estimate

the emissions from each process vent, considering controls, using the methods in § 98.123(c)(1). You must characterize the emissions of any process vent that emits 25,000 metric tons CO_2e or more as specified in § 98.124(b)(4).

(ii) For other vents, including vents from processes that emit less than 25,000 metric tons CO_2e, you must characterize emissions as specified in § 98.124(b)(5).

(iii) For fluorine emissions that are not accounted for by vent estimates, you must characterize emissions as specified in § 98.124(b)(6).

(9) The total mass of fluorine-containing reactant d emitted must be estimated at least monthly based on the total fluorine emitted and the fraction that consists of fluorine-containing reactants using Equation L–11 of this section. If the fluorine-containing reactant d is a non-GHG, you may assume that FER_d is zero.

$$E_{R-ip} = \frac{FER_d * E_F}{\left(\sum_{d=1}^{v} FER_d * MFF_{Rd} + FEP * MFF_P + \sum_{k=1}^{u} FEB_k * MFF_{Bk} \right)} \qquad \text{(Eq. L-11)}$$

Where:

E_{R-ip} = Total mass of fluorine-containing reactant d that is emitted from process i over the period p (metric tons).

FER_d = The fraction of the mass emitted that consists of the fluorine-containing reactant d.

E_F = Total mass of fluorine emissions from process i over the period p (metric tons), calculated in Equation L–6 of this section.

FEP = The fraction of the mass emitted that consists of the fluorine-containing product.

FEB_k = The fraction of the mass emitted that consists of fluorine-containing by-product k.

MFF_{Rd} = Mass fraction of fluorine in reactant d, calculated in Equation L–14 of this section.

MFF_P = Mass fraction of fluorine in the product, calculated in Equation L–15 of this section.

MFF_{Bk} = Mass fraction of fluorine in by-product k, calculation in Equation L–16 of this section.

u = Number of fluorine-containing by-products generated in process i.

v = Number of fluorine-containing reactants fed into process i.

(10) The total mass of fluorine-containing product emitted must be estimated at least monthly based on the total fluorine emitted and the fraction that consists of fluorine-containing products using Equation L–12 of this section. If the fluorine-containing product is a non-GHG, you may assume that FEP is zero.

$$E_{P-ip} = \frac{FEP * E_F}{\left(\sum_{d=1}^{v} FER_d * MFF_{Rd} + FEP * MFF_P + \sum_{k=1}^{u} FEB_k * MFF_{Bk} \right)}$$

(Eq. L-12)

Where:

E_{P-ip} = Total mass of fluorine-containing product emitted from process i over the period p (metric tons).

FEP = The fraction of the mass emitted that consists of the fluorine-containing product.

E_F = Total mass of fluorine emissions from process i over the period p (metric tons), calculated in Equation L–6 of this section.

FER_d = The fraction of the mass emitted that consists of fluorine-containing reactant d.

FEB_k = The fraction of the mass emitted that consists of fluorine-containing by-product k.

MFF_{Rd} = Mass fraction of fluorine in reactant d, calculated in Equation L–14 of this section.

MFF_P = Mass fraction of fluorine in the product, calculated in Equation L–15 of this section.

MFF_{Bk} = Mass fraction of fluorine in by-product k, calculation in Equation L–16 of this section.

u = Number of fluorine-containing by-products generated in process i.

v = Number of fluorine-containing reactants fed into process i.

(11) The total mass of fluorine-containing by-product k emitted must be estimated at least monthly based on the total fluorine emitted and the fraction that consists of fluorine-containing by-products using Equation L–13 of this section. If fluorine-containing by-product k is a non-GHG, you may assume that FEB_k is zero.

$$E_{Bk-ip} = \frac{FEB_k * E_F}{\left(\sum_{1}^{v} FER_d * MFF_{Rd} + FEP * MFF_P + \sum_{k=1}^{u} FEB_k * MFF_{Bk} \right)}$$

(Eq. L-13)

Where:

E_{Bk-ip} = Total mass of fluorine-containing by-product k emitted from process i over the period p (metric tons).

FEB_k = The fraction of the mass emitted that consists of fluorine-containing by-product k.

FER_d = The fraction of the mass emitted that consists of fluorine-containing reactant d.

FEP = The fraction of the mass emitted that consists of the fluorine-containing product.

E_F = Total mass of fluorine emissions from process i over the period p (metric tons), calculated in Equation L–6 of this section.

MFF_{Rd} = Mass fraction of fluorine in reactant d, calculated in Equation L–14 of this section.

MFF_P = Mass fraction of fluorine in the product, calculated in Equation L–15 of this section.

MFF_{Bk} = Mass fraction of fluorine in by-product k, calculation in Equation L–16 of this section.

u = Number of fluorine-containing by-products generated in process i.

v = Number of fluorine-containing reactants fed into process i.

(12) The mass fraction of fluorine in reactant d must be estimated using Equation L–14 of this section:

$$MFF_{Rd} = MF_{Rd} * \frac{AW_F}{MW_{Rd}}$$

(Eq. L-14)

Where:

MFF_{Rd} = Mass fraction of fluorine in reactant d (fraction).

MF_{Rd} = Moles fluorine per mole of reactant d.

AW_F = Atomic weight of fluorine.

MW_{Rd} = Molecular weight of reactant d.

(13) The mass fraction of fluorine in the product must be estimated using Equation L–15 of this section:

$$MFF_P = MF_P * \frac{AW_F}{MW_P}$$

(Eq. L-15)

Where:

MFF_P = Mass fraction of fluorine in the product (fraction).

MF_P = Moles fluorine per mole of product.

AW_F = Atomic weight of fluorine.

MW_P = Molecular weight of the product produced.

(14) The mass fraction of fluorine in by-product k must be estimated using Equation L–16 of this section:

$$MFF_{Bk} = MF_{Bk} * \frac{AW_F}{MW_{Bk}}$$

(Eq. L-16)

Where:

MFF_{Bk} = Mass fraction of fluorine in the product (fraction).
MF_{Bk} = Moles fluorine per mole of by-product k.
AW_F = Atomic weight of fluorine.

MW_{Bk} = Molecular weight of by-product k.

(15) Alternative for determining the mass of fluorine destroyed or recaptured. As an alternative to using Equation L–7 of this section as provided in paragraph (b)(4) of this section, you may estimate at least monthly

the total mass of fluorine in destroyed or recaptured streams containing fluorine-containing compounds (including all fluorine-containing reactants, products, and byproducts) using Equation L–17 of this section.

$$F_D = \sum_{j=1}^{q} DE_{avgj} * c_{TFj} * S_j + \sum_{l=1}^{x} c_{TFl} * S_l \qquad \text{(Eq. L-17)}$$

Where:

F_D = Total mass of fluorine in destroyed or recaptured streams from process i containing fluorine-containing reactants, products, and by-products over the period p.
DE_{avgj} = Weighted average destruction efficiency of the destruction device for the fluorine-containing compounds identified in destroyed stream j under § 98.124(b)(4)(ii) and (5)(ii) (calculated in Equation L–18 of this section)(fraction).

c_{TFj} = Concentration (mass fraction) of total fluorine in stream j removed from process i and fed into the destruction device over the period p. If this concentration is only a trace concentration, c_{TFj} is equal to zero.
S_j = Mass removed in stream j from process i and fed into the destruction device over the period p (metric tons).
c_{TFl} = Concentration (mass fraction) of total fluorine in stream l removed from process i and recaptured over the period p. If this concentration is only a trace concentration, c_{Bkl} is equal to zero.

S_l = Mass removed in stream l from process i and recaptured over the period p.
q = Number of streams destroyed in process i.
x = Number of streams recaptured in process i.

(16) Weighted average destruction efficiency. For purposes of Equation L–17 of this section, calculate the weighted average destruction efficiency applicable to a destroyed stream using Equation L–18 of this section.

$$DE_{avgj} = \frac{\sum_{f=1}^{w} DE_{FGHGf} * c_{FGHGf} * S_j * MFF_{FGHGf} + \sum_{g=1}^{y} c_{FCg} * S_j * MFF_g}{\sum_{f=1}^{w} c_{FGHGf} * S_j * MFF_{FGHGf} + \sum_{g=1}^{y} c_{FCg} * S_j * MFF_g} \qquad \text{(Eq. L-18)}$$

Where:

DE_{avgj} = Weighted average destruction efficiency of the destruction device for the fluorine-containing compounds identified in destroyed stream j under 98.124(b)(4)(ii) or (b)(5)(ii), as appropriate.
DE_{FGHGf} = Destruction efficiency of the device that has been demonstrated for fluorinated GHG f in stream j (fraction).
c_{FGHGfj} = Concentration (mass fraction) of fluorinated GHG f in stream j removed from process i and fed into the destruction device over the period p. If this concentration is only a trace concentration, $c_{F–GHGfj}$ is equal to zero.
c_{FCgj} = Concentration (mass fraction) of non-GHG fluorine-containing compound g in stream j removed from process i and fed into the destruction device over the period p. If this concentration is only a trace concentration, c_{FCgj} is equal to zero.
S_j = Mass removed in stream j from process i and fed into the destruction device over the period p (metric tons).
MFF_{FGHGf} = Mass fraction of fluorine in fluorinated GHG f, calculated in Equation L–14, L–15, or L–16 of this section, as appropriate.
MFF_{FCg} = Mass fraction of fluorine in non-GHG fluorine-containing compound g, calculated in Equation L–14, L–15, or L–16 of this section, as appropriate.
w = Number of fluorinated GHGs in destroyed stream j.
y = Number of non-GHG fluorine-containing compounds in destroyed stream j.

2. *Mass Balance Method for § 98.124(b).* [Note: Numbering convention here matches original rule text, 75 FR 74774, December 1, 2010.]

(b) *Mass balance monitoring.* If you determine fluorinated GHG emissions from any process using the mass balance method under § 98.123(b), you must estimate the total mass of each fluorinated GHG emitted from that process at least monthly. Only streams that contain greater than trace concentrations of fluorine-containing reactants, products, or by-products must be monitored under this paragraph. If you use an element other than fluorine in the mass-balance equation pursuant to § 98.123(b)(3), substitute that element for fluorine in the monitoring requirements of this paragraph.

(1) *Mass measurements.* Measure the following masses on a monthly or more frequent basis using flowmeters, weigh scales, or a combination of volumetric and density measurements with accuracies and precisions that allow the facility to meet the error criteria in § 98.123(b)(1):

(i) Total mass of each fluorine-containing product produced. Account for any used fluorine-containing product added into the production process upstream of the output measurement as directed at §§ 98.413(b) and 98.414(b). For each product, the mass produced used for the mass-balance calculation must be the same as the mass produced that is reported under subpart OO of this part, where applicable.

(ii) Total mass of each fluorine-containing reactant fed into the process.

(iii) The mass removed from the process in each stream fed into the destruction device.

(iv) The mass removed from the process in each recaptured stream.

(2) *Concentration measurements for use with § 98.123(b)(4).* If you use § 98.123(b)(4) to estimate the mass of fluorine in destroyed or recaptured streams, measure the following concentrations at least once each calendar month during which the process is operating, on a schedule to ensure that the measurements are representative of the full range of process conditions (*e.g.,* catalyst age). Measure more frequently if this is necessary to meet the error criteria in § 98.123(b)(1). Use equipment and methods (*e.g.,* gas chromatography) that comply with paragraph (e) of this section and that have an accuracy and precision that allow the facility to meet the error criteria in § 98.123(b)(1). Only fluorine-containing reactants, products, and by-products that occur in a stream in greater than trace concentrations must be monitored under this paragraph.

(i) The concentration (mass fraction) of the fluorine-containing product in each stream that is fed into the destruction device.

(ii) The concentration (mass fraction) of each fluorine-containing by-product in each stream that is fed into the destruction device.

(iii) The concentration (mass fraction) of each fluorine-containing reactant in each stream that is fed into the destruction device.

(iv) The concentration (mass fraction) of each fluorine-containing by-product in each stream that is recaptured (c_{Bkl}).

(3) *Concentration measurements for use with § 98.123(b)(15).* If you use § 98.123(b)(15) to estimate the mass of fluorine in destroyed or recaptured streams, measure the concentrations listed in paragraphs (b)(3)(i) and (ii) of this section at least once each calendar month during which the process is operating, on a schedule to ensure that the measurements are representative of the full range of process conditions (*e.g.,* catalyst age). Measure more frequently if this is necessary to meet the error criteria in § 98.123(b)(1). Use equipment and methods (*e.g.,* gas chromatography) that comply with paragraph (e) of this section and that have an accuracy and precision that allow the facility to meet the error criteria in § 98.123(b)(1). Only fluorine-containing reactants, products, and by-products that occur in a stream in greater than trace concentrations must be monitored under this paragraph.

(i) The concentration (mass fraction) of total fluorine in each stream that is fed into the destruction device.

(ii) The concentration (mass fraction) of total fluorine in each stream that is recaptured.

(4) *Emissions characterization: process vents emitting 25,000 metric tons CO₂e or more.* To characterize emissions from any process vent emitting 25,000 metric tons CO₂e or more, comply with paragraphs (b)(4)(i) through (b)(4)(v) of this section, as appropriate. Only fluorine-containing reactants, products, and by-products that occur in a stream in greater than trace concentrations must be monitored under this paragraph.

(i) *Uncontrolled emissions.* If emissions from the process vent are not routed through a destruction device, sample and analyze emissions at the process vent or stack or sample and analyze emitted streams before the process vent. If the process has more than one operating scenario, you must either perform the emission characterization for each operating scenario or perform the emission characterization for the operating scenario that is expected to have the largest emissions and adjust the emission characterization for other scenarios using engineering calculations and assessments as specified in § 98.123(c)(4). To perform the characterization, take three samples under conditions that are representative for the operating scenario. Measure the concentration of each fluorine-containing compound in each sample. Use equipment and methods that comply with paragraph (e) of this section. Calculate the average concentration of each fluorine-containing compound across all three samples.

(ii) *Controlled emissions using § 98.123(b)(15).* If you use § 98.123(b)(15) to estimate the total mass of fluorine in destroyed or recaptured streams, and if the emissions from the process vent are routed through a destruction device, characterize emissions as specified in paragraph (b)(4)(i) of this section before the destruction device. Apply the destruction efficiency demonstrated for each fluorinated GHG in the destroyed stream to that fluorinated GHG. Exclude from the characterization fluorine-containing compounds that are not fluorinated GHGs.

(iii) *Controlled emissions using § 98.123(b)(4).* If you use § 98.123(b)(4) to estimate the mass of fluorine in destroyed or recaptured streams, and if the emissions from the process vent are routed through a destruction device, characterize the process vent's emissions monthly (or more frequently) using the monthly (or more frequent) measurements under paragraphs (b)(1)(iii) and (b)(2)(i) through (iii) of this section. Apply the destruction efficiency demonstrated for each fluorinated GHG in the destroyed stream to that fluorinated GHG. Exclude from the characterization fluorine-containing compounds that are not fluorinated GHGs.

(iv) *Emissions characterization frequency.* You must repeat emission characterizations performed under paragraph (b)(4)(i) and (ii) of this section under paragraph (b)(4)(iv)(A) or (B) of this section, whichever occurs first:

(A) *10-year revision.* Repeat the emission characterization every 10 years. In the calculations under § 98.123, apply the revised emission characterization to the process activity that occurs after the revision.

(B) *Operating scenario change that affects the emission characterization.* For planned operating scenario changes, you must estimate and compare the emission calculation factors for the changed operating scenario and for the original operating scenario whose process vent specific emission factor was measured. Use the engineering calculations and assessments specified in § 98.123(c)(4). If the share of total fluorine-containing compound emissions represented by any fluorinated GHG changes under the changed operating scenario by 15 percent or more of the total, relative to the previous operating scenario (this includes the cumulative change in the emission calculation factor since the last emissions test), you must repeat the emission characterization. Perform the emission characterization before February 28 of the year that immediately follows the change. In the calculations under § 98.123, apply the revised emission characterization to the process activity that occurs after the operating scenario change.

(v) *Subsequent measurements.* If a process vent with fluorinated GHG emissions less than 25,000 metric tons CO₂e, per § 98.123(c)(2), is later found to have fluorinated GHG emissions of 25,000 metric tons CO₂e or greater, you must perform an emission characterization under this paragraph during the following year.

(5) *Emissions characterization: Process vents emitting less than 25,000 metric tons CO₂e.* To characterize emissions from any process vent emitting less than 25,000 metric tons CO₂e, comply with paragraphs (b)(5)(i) through (iii) of this section, as appropriate. Only fluorine-containing reactants, products, and by-products that occur in a stream in greater than trace concentrations must be monitored under this paragraph.

(i) *Uncontrolled emissions.* If emissions from the process vent are not routed through a destruction device, emission measurements must consist of sampling and analysis of emissions at the process vent or stack, sampling and analysis of emitted streams before the process vent, previous test results,

provided the tests are representative of current operating conditions of the process, or bench-scale or pilot-scale test data representative of the process operating conditions.

(ii) *Controlled emissions using § 98.123(b)(15).* If you use § 98.123(b)(15) to estimate the total mass of fluorine in destroyed or recaptured streams, and if the emissions from the process vent are routed through a destruction device, characterize emissions as specified in paragraph (b)(5)(i) of this section before the destruction device. Apply the destruction efficiency demonstrated for each fluorinated GHG in the destroyed stream to that fluorinated GHG. Exclude from the characterization fluorine-containing compounds that are not fluorinated GHGs.

(iii) *Controlled emissions using § 98.123(b)(4).* If you use § 98.123(b)(4) to estimate the mass of fluorine in destroyed or recaptured streams, and if the emissions from the process vent are routed through a destruction device, characterize the process vent's emissions monthly (or more frequently) using the monthly (or more frequent) measurements under paragraphs (b)(1)(iii) and (b)(2)(i) through (iii) of this section. Apply the destruction efficiency demonstrated for each fluorinated GHG in the destroyed stream to that fluorinated GHG. Exclude from the characterization fluorine-containing compounds that are not fluorinated GHGs.

(6) *Emissions characterization: Emissions not accounted for by process vent estimates.* Calculate the weighted average emission characterization across the process vents before any destruction devices. Apply the weighted average emission characterization for all the process vents to any fluorine emissions that are not accounted for by process vent estimates.

(7) *Impurities in reactants.* If any fluorine-containing impurity is fed into a process along with a reactant (or other input) in greater than trace concentrations, this impurity shall be monitored under this section and included in the calculations under § 98.123 in the same manner as reactants fed into the process, fed into the destruction device, recaptured, or emitted, except the concentration of the impurity in the mass fed into the process shall be measured, and the mass of the impurity fed into the process shall be calculated as the product of the concentration of the impurity and the mass fed into the process. The mass of the reactant fed into the process may be reduced to account for the mass of the impurity.

(8) *Alternative to error calculation.* As an alternative to calculating the relative and absolute errors associated with the estimate of emissions under § 98.123(b), you may comply with the precision, accuracy, measurement and calculation frequency, and fluorinated GHG throughput requirements of paragraph (b)(8)(i) through (iv) of this section.

(i) *Mass measurements.* Measure the masses specified in paragraph (b)(1) of this section using flowmeters, weigh scales, or a combination of volumetric and density measurements with accuracies and

precisions of ±0.2 percent of full scale or better.

(ii) *Concentration measurements.* Measure the concentrations specified in paragraph (b)(2) or (3) of this section, as applicable, using analytical methods with accuracies and precisions of ±10 percent or better.

(iii) *Measurement and calculation frequency.* Perform the mass measurements specified in paragraph (b)(1) of this section

and the concentration measurements specified in paragraph (b)(2) or (3) of this section, as applicable, at least weekly, and calculate emissions at least weekly.

(iv) *Fluorinated-GHG throughput limit.* You may use the alternative to the error calculation specified in paragraph (b)(8) of this section only if the total annual CO_2-equivalent fluorinated GHG throughput of the process is 500,000 mtCO_2e or less. The

total throughput is the sum of the masses of the fluorinated GHG reactants, products, and by-products fed into and generated by the process. To convert these masses to CO_2e, use Equation A–1 of § 98.2. For fluorinated GHGs whose GWPs are not listed in Table A–1 to subpart A of this part, use a default GWP of 2,000.