ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 84, 261, 262, 266, 270, and 271

[EPA–HQ–OAR–2022–0606; FRL–10105–01–OAR]

Phasedown of Hydrofluorocarbons: Management of Certain Hydrofluorocarbons and Substitutes Under Subsection (h) of the American Innovation and Manufacturing Act of 2020

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of proposed rulemaking and advance notice of proposed rulemaking.

SUMMARY: The U.S. Environmental Protection Agency is proposing to issue regulations to implement certain provisions of the American Innovation and Manufacturing Act of 2020. This rulemaking proposes to establish a program for the management of hydrofluorocarbons that includes requirements for leak repair and use of automatic leak detection systems for certain equipment using refrigerants containing hydrofluorocarbons and certain substitutes; requirements for the use of reclaimed hydrofluorocarbons in certain sectors or subsectors; the use of recycled hydrofluorocarbons in fire suppression equipment; recovery of hydrofluorocarbons from cylinders; container tracking; and certain recordkeeping, reporting, and labeling requirements. The Environmental Protection Agency is also proposing alternative Resource Conservation and Recovery Act standards for spent ignitable refrigerants being recycled for reuse. Finally, EPA requests advance comment on approaches for establishing requirements for technician training and/or certification.

DATES: Comments on this notice of proposed rulemaking must be received on or before December 18, 2023. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best ensured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before November 20, 2023. The Environmental Protection Agency (EPA) will hold a virtual public hearing on or about November 3, 2023. The date, time, and other relevant information for the virtual public hearing will be available at *https://www.epa.gov/climate-hfcs-reduction.*

ADDRESSES: You may send comments, identified by docket identification number EPA–HQ–OAR–2022–0606, by any of the following methods:

- *Federal eRulemaking Portal: https://www.regulations.gov* (our preferred method). Follow the online instructions for submitting comments.
- *Mail:* U.S. Environmental Protection Agency, EPA Docket Center, Air and Radiation Docket, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- *Hand Delivery or Courier (by scheduled appointment only):* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m.–4:30 p.m., Monday–Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov,* including any personal information provided. The EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continue to provide remote customer service via email, phone, and webform. We encourage the public to submit comments via *https://www.regulations.gov* as there may be a delay in processing mail. Hand deliveries and couriers may be received by scheduled appointment only. For further information on EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets.*

You may find the following suggestions helpful for preparing your comments: Direct your comments to specific sections of this proposed rulemaking and note where your comments may apply to future separate actions where possible; explain your views as clearly as possible; describe any assumptions that you used; provide any technical information or data you used that support your views; provide specific examples to illustrate your concerns; offer alternatives; and, make sure to submit your comments by the comment period deadline. Please provide any published studies or raw data supporting your position. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (*e.g.,* on the web, cloud, or other file sharing system).

Do not submit any information you consider to be Confidential Business Information (CBI) through *https://www.regulations.gov.* For submission of confidential comments, please work with the person listed in the **FOR FURTHER INFORMATION CONTACT** section. For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Christian Wisniewski, Stratospheric Protection Division, Office of Atmospheric Protection (Mail Code 6205A), Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460; telephone number: 202–564–0417; email address: *wisniewski.christian@epa.gov.* You may also visit EPA's website at *https://www.epa.gov/climate-hfcs-reduction* for further information.

For information related to the proposed alternative standards for certain ignitable spent refrigerants under the Resource Conservation and Recovery Act (RCRA), please contact Tracy Atagi, Materials Recovery and Waste Management Division, Office of Resource Conservation and Recovery (5304T), Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460; telephone number: (202) 566–0511; email address: *atagi.tracy@epa.gov.*

SUPPLEMENTARY INFORMATION: Throughout this document whenever ''we,'' ''us,'' ''the Agency,'' or ''our'' is used, we mean EPA. Acronyms that are used in this rulemaking that may be helpful include:

AC—Air Conditioning
AHRI—Air-Conditioning, Heating, and Refrigeration Institute
ALD—Automatic Leak Detection
AIM Act—American Innovation and Manufacturing Act of 2020
APF—Air Permitting Forum
ASHRAE—American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM—American Society for Testing and Materials
CAA—Clean Air Act
CARB—California Air Resources Board
CBI—Confidential Business Information
CBP—U.S. Customs and Border Protection
CFC—Chlorofluorocarbon
CFR—Code of Federal Regulations
CO_2e—Carbon Dioxide Equivalent
DOT—Department of Transportation
ECHO—Enforcement and Compliance History Online
e-GGRT—Electronic Greenhouse Gas Reporting Tool
ENGO—Environmental Non-governmental Organization
E.O.—Executive Order
EPA—Environmental Protection Agency

EVe—Exchange Value Equivalent
FEMA—Fire Equipment Manufacturers Association
FOIA—Freedom of Information Act
FR—Federal Register
FSSA—Fire Suppression Systems Association
FSTOC—Fire Suppression Technical Options Committee
GHG—Greenhouse gas
GHGRP—Greenhouse Gas Reporting Program
GWP—Global Warming Potential
HAP—Hazardous Air Pollutant
HARC—Halon Alternatives Research Corporation
HCFC—Hydrochlorofluorocarbon
HD—Heavy-duty
HEEP—HFC Emissions Estimating Program
HFC—Hydrofluorocarbon
HFO—Hydrofluoroolefin
HSWA—Hazardous and Solid Waste Amendments of 1984
HTOC—Halons Technical Options Committee
ICR—Information Collection Request
IPCC—Intergovernmental Panel on Climate Change
IPR—Industrial Process Refrigeration
IWG—Interagency Working Group on the Social Cost of Greenhouse Gases
ISO—International Organization for Standardization
MACS—Mobile Air Climate Systems Association
$MMTCO_2e$—Million Metric Tons of Carbon Dioxide Equivalent
MMTEVe—Million Metric Tons of Exchange Value Equivalent
MTEVe—Metric Tons of Exchange Value Equivalent
MVAC—Motor vehicle air conditioner
NAAQS—National Ambient Air Quality Standards
NAICS—North American Industrial Classification System
NAFED—National Association of Fire Equipment Distributors
NATA—National Air Toxics Assessment
NEDA/CAP—National Environmental Development Association's Clean Air Project
NEI—National Emissions Inventory
NFPA—National Fire Protection Association
NODA—Notice of Data Availability
NRDC—Natural Resources Defense Council
ODP—Ozone Depletion Potential
ODS—Ozone depleting substances
OEM—Original Equipment Manufacturer
OLEM—Office of Land and Emergency Management
OMB—Office of Management and Budget
ppm—Parts Per Million
PRA—Paperwork Reduction Act
R4 Program—Refrigerant Recovery, Reclaim, and Reuse Requirements (CARB Program)
RACHP—Refrigeration, Air Conditioning, and Heat Pumps
RCOP—Recycling Code of Practice
RCRA—Resource Conservation and Recovery Act
RFA—Regulatory Flexibility Act
RIA—Regulatory Impact Analysis
RRA—Refrigerant Reclaim Australia
SC–HFC—Social Cost of Hydrofluorocarbons
SISNOSE—Significant Economic Impact on a Substantial Number of Small Entities
SNAP—Significant New Alternatives Policy
VCOP—Voluntary Code of Practice
TRI—Toxics Release Inventory
VRF—Variable Refrigerant Flow
VSQG—Very Small Quantity Generator

Table of Contents

I. Executive Summary

A. What is the purpose of this proposed regulatory action?

The Environmental Protection Agency (EPA) is proposing regulations that would implement certain provisions of the American Innovation and Manufacturing Act of 2020, codified at 42 U.S.C. 7675 (AIM Act or the Act). The AIM Act authorizes EPA to address hydrofluorocarbons (HFCs) in three main ways: phasing down HFC production and consumption through an allowance allocation program; facilitating the transition to next-generation technologies by restricting use of these HFCs in the sector or subsectors in which they are used; and promulgating certain regulations for purposes of maximizing reclaiming and minimizing releases of HFCs from equipment and ensuring the safety of technicians and consumers. This proposal focuses on the third area—establishing certain regulations for HFCs and their substitutes for the purposes of maximizing reclaiming and minimizing releases of HFCs from equipment and ensuring the safety of technicians and consumers.

More specifically, subsection (h) of the AIM Act, entitled ''Management of regulated substances,'' directs EPA to promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves: a regulated substance (used interchangeably with ''HFCs'' in this proposed rulemaking), a substitute for a regulated substance, the reclaiming of a regulated substance used as a refrigerant, or the reclaiming of a substitute for a regulated substance used as a refrigerant.

This proposed rulemaking addresses how EPA intends to start implementing the provisions of subsection (h), including its authority to issue regulations to control such practices, processes, and activities, particularly as related to the management, use, and reuse of HFCs and substitutes in equipment. Further, this action proposes provisions to support implementation of, compliance with, and enforcement of requirements under subsection (h) of the AIM Act. Additionally, EPA is proposing alternative Resource Conservation and Recovery Act (RCRA) standards for certain spent ignitable refrigerants being recycled for reuse, as that term is proposed to be used under RCRA.[1] These proposed standards would involve regulatory changes to 40 CFR parts 261–271 and not be part of the regulations under subsection (h)(1) of the AIM Act.

B. What is the summary of this proposed regulatory action?

This section of the preamble describes a summary of the proposed provisions of this rulemaking, which are described in more detail in the relevant sections of this proposal.

Management of regulated substances. EPA is proposing to establish a program for the management of HFCs that includes requirements with compliance dates ranging between 60 days after publication of the final rule to January 1, 2028, for:

- Leak repair of appliances containing HFCs and/or certain substitutes for HFCs (whether the appliance uses the HFC or substitute for an HFC neat or in a blend with other substances). The leak repair requirements would apply to appliances containing 15 pounds or more of a refrigerant that contains an HFC or contains a substitute for an HFC with a global warming potential (GWP) above 53 with specific exceptions;
- Use of automatic leak detection (ALD) systems for certain new and existing appliances containing 1,500 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53;
- A proposed reclamation standard;
- The use of reclaimed HFCs in certain refrigeration, air conditioning, and heat pump (RACHP) sectors or subsectors and applications for the initial charge or installation of equipment and servicing and/or repair of existing equipment and the use of recycled HFCs in the initial charge or servicing and/or repair of fire suppression equipment;
- The servicing, repair, disposal, or installation of fire suppression equipment that contains HFCs, with the purpose of minimizing the release of HFCs from that equipment, as well as requirements related to technician training in the fire suppression sector;
- Recovery of HFCs from disposable cylinders prior to disposal;
- Container tracking for HFCs that could be used in the servicing, repair, and/or installation of refrigerant-containing or fire suppression equipment; and
- Recordkeeping, reporting, and labeling.

Amendments to Resource Conservation and Recovery Act (RCRA) hazardous waste regulations. EPA is proposing alternative standards for spent ignitable refrigerants when recycled for reuse, as that term is proposed to be used under RCRA. EPA is proposing that the 40 CFR part 266 Subpart Q RCRA alternative standards would apply to HFCs and other substitutes that do not belong to flammability Class 3 as classified by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 34–2022.[2] EPA is proposing to limit the alternative standards to lower flammability substitutes (Class 1, 2, and

[1] The terms ''reclaim'' and ''recycle'' have different regulatory purposes and definitions under RCRA than under the CAA and the AIM Act. Under RCRA, a material is ''reclaimed'' if it is processed to recover a usable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents (See 40 CFR 261.1(c)(4)). Reclamation is one of the four types of ''recycling'' identified in 40 CFR 261.2(c) that can involve management of a solid waste under RCRA.

[2] ASHRAE Standard 34–2022 assigns a safety group classification for each refrigerant which consists of two alphanumeric characters (*e.g.,* A2 or B1). The capital letter indicates the toxicity class (''A'' for lower toxicity) and the numeral denotes the flammability. ASHRAE recognizes three classifications and one subclass for refrigerant flammability. The three main flammability classifications are Class 1, for refrigerants that do not propagate a flame when tested as per the ASHRAE 34 standard, ''Designation and Safety Classification of Refrigerants;'' Class 2, for refrigerants of lower flammability; and Class 3, for highly flammable refrigerants, such as the hydrocarbon refrigerants. ASHRAE recently updated the safety classification matrix to include a new flammability subclass 2L, for flammability Class 2 refrigerants that burn very slowly.

2L) because of the lower risk of fire from the collection and recycling for reuse of these refrigerants, and the greater market value of these refrigerants, which supports the conclusion that these spent refrigerants will be recycled for reuse and not stockpiled, mismanaged, or abandoned.

Enforcement and compliance. To support compliance with the proposed requirements, EPA is proposing labeling, reporting, and recordkeeping requirements as described in this action. EPA is also requiring reporting and recordkeeping for the reduction of HFC emissions for the fire suppression sector. The Agency is proposing to use the same reporting platform used in prior AIM Act rules and the Greenhouse Gas Reporting Program (GHGRP).[3]

Additionally, EPA requests advance comment on approaches for establishing requirements for RACHP technician training and/or certification. Specifically, EPA is seeking advance comment on whether, through a separate rulemaking, EPA should propose to establish training and/or service requirements for technicians under subsection (h), in particular, for flammable refrigerants. And, if so, how such a training program might be managed.

The Agency is not proposing any regulatory requirements under subsection (h) for HFCs and substitutes for HFCs used in applications besides RACHP and fire suppression sectors at this time. However, the Agency will continue to monitor the use and emissions of HFCs more generally and such information may inform future rulemakings under subsection (h).

C. What is the summary of the costs and benefits?

EPA is providing information on the costs and benefits for the provisions related to managing regulated substances and their substitutes in this proposed rule. The analyses, presented in the *Analysis of the Economic Impact and Benefits of the Proposed Rule* technical support document (TSD) and in a regulatory impact analysis (RIA) addendum to the Allocation Framework Rule RIA, are contained in the docket to this proposed rule and are intended to provide the public with information on the relevant costs and benefits of this action, if finalized as proposed, and to comply with executive orders. EPA notes that the costs and benefits associated with the management of regulated substances and their substitutes under the AIM Act are described and calculated separately from those associated with the proposed amendments to the RCRA hazardous waste regulations. These analyses—as summarized below—highlight economic cost and benefits, including benefits from leak repair and emissions reductions.

Given that the provisions EPA is proposing concern HFCs, which are subject to the phasedown of production and consumption under the AIM Act, EPA relied on its previous estimates of the impacts of already finalized AIM Act rules as a starting point for the assessment of costs and benefits of this rule. Specifically, the Allocation Framework Rule, ''Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program Under the American Innovation and Manufacturing Act'' (86 FR 55116, October 5, 2021) and the 2024 Allocation Rule, ''Phasedown of Hydrofluorocarbons: Allowance Allocation Methodology for 2024 and Later Years'' (88 FR 46836, July 20, 2023) [4] are assumed as a baseline for this proposed rule. In this way, EPA analyzed the potential incremental impacts of the proposed rule, attributing benefits only insofar as they are additional to those already assessed in the Allocation Framework Rule RIA and the 2024 Allocation Rule RIA addendum (collectively referred to as ''Allocation Rules'' in this discussion). For example, a mitigation option in the marginal abatement cost (MAC) analysis for the Allocation Rules assumed a reduction in refrigerant leaks; all costs and benefits calculated for this rule are for leak reductions over and above those assumed in the previous analysis.

As detailed in the RIA addendum, the number, charge sizes, leak rates, and other characteristics of potentially affected RACHP equipment were estimated using EPA's Vintaging Model.[5] The leak repair and ALD system provisions proposed are assumed to lead leaking systems to be repaired earlier than they otherwise would have, leading to reduced emissions of HFCs. Provisions requiring the use of reclaimed refrigerant, requirements for the fire suppression sector, and provisions related to the handling of disposable cylinders are further estimated to result in incremental reductions in HFC emissions. These reductions in HFC emissions result in climate benefits due to reduced climate forcing as calculated by multiplying avoided emissions by the social cost of each HFC (SC–HFCs).

In the years 2025–2050, the proposed rule provisions would prevent an estimated 142 million metric tons of CO_2 equivalent ($MMTCO_2e$) in HFC emissions, and the present value of economic benefit of avoiding the damages associated with those emissions is estimated at $9.8 billion (in 2022 dollars, discounted to 2024 using a three percent discount rate). The annual benefits are estimated to decrease over time due to the HFC phasedown and the transition out of the higher-GWP HFCs, lowering the average GWP of later emissions. For example, it is estimated that the leak repair and ALD system provisions would prevent 3.8 $MMTCO_2e$ of HFC emissions in 2030 and 2.8 $MMTCO_2e$ in the year 2040.

Reducing HFC emissions due to fixing leaks earlier would also be anticipated to lead to savings for some system owner/operators, as less new refrigerant would need to be purchased to replace leaked refrigerant. In 2025, it is estimated that the proposed leak repair and ALD provisions would lead to savings of $13 million (2022$). EPA acknowledges that these savings would not completely offset leak repair compliance costs and may not accrue uniformly to all regulated entities, and EPA requests comment on this estimate. Further, while these provisions have been estimated to result in savings, EPA understands that entities that would be affected by these proposed regulations might not perform the practices, processes, or activities that would result in cost savings absent regulation. When entities are reviewing their own economic analyses, some factors may be pertinent that make new technologies or economically favorable best practices less attractive than existing practices, or some market failure may exist that acts as a barrier to businesses' adoption of

[3] The GHGRP requires reporting of greenhouse gas (GHG) data and other relevant information from large GHG emission sources, fuel and industrial gas suppliers, and carbon dioxide (CO_2) injection sites in the United States. The program generally requires reporting when emissions from covered sources are greater than 25,000 metric tons of CO_2e per year. Publicly available information includes facility names, addresses, and latitude/longitude information.

[4] EPA recently finalized two separate rulemakings to update the regulations established in the HFC Allocation Framework Rule. The first rule, ''Phasedown of Hydrofluorocarbons: Allowance Allocation Methodology for 2024 and Later Years,'' established the methodology for allocating HFC production and consumption allowances starting with calendar year 2024 allowances and adjusted the consumption baseline downward by less than 0.5% to reflect corrected data, among other changes (88 FR 46836, July 20, 2023). The second, ''Phasedown of Hydrofluorocarbons: Adjustment to the Hydrofluorocarbon Baseline,'' amended the production baseline downward by 0.005% to reflect corrected data (88 FR 44220, July 12, 2023).

[5] U.S. Environmental Protection Agency (EPA). 2023. EPA's Vintaging Model representing the Allocation Framework Rule as modified by the 2024 Allocation Rule RIA addendum. VM IO file_v4.4_02.04.16_2024 Allocation Rule.

the most profitable course.[6] For example, market failures may exist where there are imperfect information or split incentives; such as decision-makers not knowing the percentage of energy use associated with refrigeration or the costs of replacing refrigerant lost from leaking appliances.

The compliance costs of the proposed rule include recordkeeping and reporting costs, the costs of purchasing and operating ALD systems, costs of required inspections, the cost of repairing leaks earlier than would have been necessary without the proposed provisions, and the cost of proposed disposable cylinder management requirements. In the years 2025–2050, these provisions would result in compliance costs (inclusive of refrigerant savings) with a present value estimated at $3.7 billion in 2022 dollars at a 3 percent discount rate or $2.4 billion at a 7 percent discount rate.

Taking into account both benefits and compliance costs over the 2025–2050 time period, it is estimated that the proposed rule would result in present value net benefit (benefits minus compliance costs), of $6.1 billion (with compliance costs discounted at three percent) to $7.4 billion (with compliance costs discounted at seven percent).

As detailed in the draft RIA addendum, these values represent a conservative estimate of potential incremental benefits and assume potential HFC consumption- and emissions-reducing activities required by some of the proposed rule's provisions could be offset to the extent that available consumption and production allowances are shifted to meet demand in subsectors not covered by the proposed rule. Given the inherent uncertainty of future industry behavior, in the draft RIA addendum EPA has also provided estimates under an additional scenario in which these offsetting effects to not occur and additional incremental benefits accrue.

Some of the information regarding projected impacts of certain aspects of the proposal was considered by EPA as it developed this proposed rule. To the extent that EPA has considered such information it is compiled in the *Analysis of the Economic Impact and Benefits of the Proposed Rule* draft TSD, which is in the docket for this rulemaking.

Although EPA is using SC–HFCs for purposes of some of the analysis in the RIA addendum, this proposed action does not rely on those estimates of these costs as a record basis for the Agency action, and EPA would reach the proposed conclusions even in the absence of the social costs of HFCs. Additional information on these analyses can be found in section VI. of this document, as well as the RIA addendum and the *Analysis of the Economic Impact and Benefits of the Proposed Rule* draft TSD, which is in the docket for this rulemaking.

II. General Information

A. Does this action apply to me?

You may be potentially affected by this rule if you own, operate, service, repair, recycle, dispose, or install equipment containing HFCs or their substitutes, as well as if you recover, recycle, or reclaim HFCs or their substitutes. You may also be potentially affected if you manufacture or sell equipment containing HFCs or their substitutes. Potentially affected categories, by North American Industry Classification System (NAICS) code, are included in Table 1.

TABLE 1—NAICS CLASSIFICATION OF POTENTIALLY AFFECTED ENTITIES

NAICS code	NAICS industry description
236118	Residential Remodelers.
236220	Commercial and Institutional Building Construction.
238220	Plumbing, Heating, and Air–Conditioning Contractors.
238990	All Other Specialty Trade Contractors.
311812	Commercial Bakeries.
321999	All Other Miscellaneous Wood Product Manufacturing.
322299	All Other Converted Paper Product Manufacturing.
324191	Petroleum Lubricating Oil and Grease Manufacturing.
324199	All Other Petroleum and Coal Products Manufacturing.
325199	All Other Basic Organic Chemical Manufacturing.
325211	Plastics Material and Resin Manufacturing.
325412	Pharmaceutical Preparation Manufacturing.
325414	Biological Product (except Diagnostic) Manufacturing.
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing.
326299	All Other Rubber Product Manufacturing.
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing.
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers.
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing.
333415	Air–Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing.
333511	Industrial Mold Manufacturing.
333912	Air and Gas Compressor Manufacturing.
333999	All Other Miscellaneous General Purpose Machinery Manufacturing.
334413	Semiconductor and Related Device Manufacturing.
334419	Other Electronic Component Manufacturing.
334516	Analytical Laboratory Instrument Manufacturing.
335220	Major Household Appliance Manufacturing.
336120	Heavy Duty Truck Manufacturing.
336212	Truck Trailer Manufacturing.
336214	Travel Trailer and Camper Manufacturing.
3363	Motor Vehicle Parts Manufacturing.
3364	Aerospace Product and Parts Manufacturing.
336411	Aircraft Manufacturing.
336611	Ship Building and Repairing.

[6] Klemick, Heather & Kopits, Elizabeth & Wolverton, Ann. ''Potential Barriers to Improving Energy Efficiency in Commercial Buildings: The Case of Supermarket Refrigeration.'' Journal of Benefit-Cost Analysis. 8, 2017, pp. 1–31.

TABLE 1—NAICS CLASSIFICATION OF POTENTIALLY AFFECTED ENTITIES—Continued

NAICS code	NAICS industry description
336612	Boat Building.
339112	Surgical and Medical Instrument Manufacturing.
339113	Surgical Appliance and Supplies Manufacturing.
339999	All Other Miscellaneous Manufacturing.
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers.
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers.
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers.
423620	Household Appliances, Electric Housewares, and Consumer Electronics Merchant Wholesalers.
423690	Other Electronic Parts and Equipment Merchant Wholesalers.
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers.
423730	Warm Air Heating and Air–Conditioning Equipment and Supplies Merchant Wholesalers.
423740	Refrigeration Equipment and Supplies Merchant Wholesalers.
423830	Industrial Machinery and Equipment Merchant Wholesalers.
423840	Industrial Supplies Merchant Wholesalers.
423850	Service Establishment Equipment and Supplies Merchant Wholesalers.
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers.
423990	Other Miscellaneous Durable Goods Merchant Wholesalers.
424690	Other Chemical and Allied Products Merchant Wholesalers.
424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers.
441310	Automotive Parts and Accessories Stores.
443141	Household Appliance Stores.
444190	Other Building Material Dealers.
445110	Supermarkets and Other Grocery (except Convenience) Stores.
445131	Convenience Retailers.
445298	All Other Specialty Food Retailers.
446191	Food (Health) Supplement Stores.
449210	Electronics and Appliance Retailers.
452311	Warehouse Clubs and Supercenters.
453998	All Other Miscellaneous Store Retailers (except Tobacco Stores).
45711	Gasoline Stations With Convenience Stores.
481111	Scheduled Passenger Air Transportation.
488510	Freight Transportation Arrangement.
493110	General Warehousing and Storage.
531120	Lessors of Nonresidential Buildings (except Mini warehouses).
541330	Engineering Services.
541380	Testing Laboratories.
541512	Computer Systems Design Services.
541519	Other Computer Related Services.
541620	Environmental Consulting Services.
561210	Facilities Support Services.
561910	Packaging and Labeling Services.
561990	All Other Support Services.
562111	Solid Waste Collection.
562211	Hazardous Waste Treatment and Disposal.
562920	Materials Recovery Facilities.
621498	All Other Outpatient Care Centers.
621999	All Other Miscellaneous Ambulatory Health Care Services.
72111	Hotels (Except Casino Hotels) and Motels.
72112	Casino Hotels.
72241	Drinking Places (Alcoholic Beverages).
722511	Full-service Restaurants.
722513	Limited-Service Restaurants.
722514	Cafeterias, Grill Buffets, and Buffets.
722515	Snack and Nonalcoholic Beverage Bars.
81119	Other Automotive Repair and Maintenance.
811219	Other Electronic and Precision Equipment Repair and Maintenance.
811412	Appliance Repair and Maintenance.
922160	Fire Protection.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA expects could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your entity may be regulated by this action, you should carefully examine the proposed regulatory text at the end of this document. If you have questions regarding the applicability of this action to a particular entity, consult the people listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. What is EPA's authority for taking this action?

On December 27, 2020, the AIM Act was enacted as section 103 in Division S, Innovation for the Environment, of the Consolidated Appropriations Act, 2021 (42 U.S.C. 7675). In subsection (k)(1)(A), the AIM Act provides EPA with the authority to promulgate

necessary regulations to carry out EPA's functions under the Act, including its obligations to ensure that the Act's requirements are satisfied (42 U.S.C. 7675(k)(1)(A)). Subsection (k)(1)(C) of the Act also provides that Clean Air Act (CAA) sections 113, 114, 304, and 307 apply to the AIM Act and any regulations EPA promulgates under the AIM Act as though the AIM Act were part of CAA Title VI (42 U.S.C. 7675(k)(1)(C)). Accordingly, this rulemaking is subject to CAA section 307(d) (see 42 U.S.C. 7607(d)(1)(I)) (CAA section 307(d) applies to ''promulgation or revision of regulations under subchapter VI of this chapter (relating to stratosphere and ozone protection)'').

The AIM Act authorizes EPA to address hydrofluorocarbons (HFCs) in three main ways: phasing down HFC production and consumption through an allowance allocation program; facilitating the transition to next-generation technologies by restricting use of these HFCs in the sector or subsectors in which they are used; and promulgating certain regulations for purposes of maximizing reclaiming and minimizing releases of HFCs from equipment and ensuring the safety of technicians and consumers. This proposal focuses on the third area—establishing certain regulations for HFCs and their substitutes for the purposes of maximizing reclaiming [7] and minimizing releases of HFCs from equipment and ensuring the safety of technicians and consumers.

The identification of regulated substances is addressed under subsection (c) of the Act. The Act lists 18 saturated HFCs, and by reference any of their isomers not so listed, that are covered by the statute's provisions, referred to as ''regulated substances'' [8] under the Act (42 U.S.C. 7675(c)(1)). Congress also assigned an ''exchange value'' [9] [10] to each regulated substance. EPA is also authorized to designate additional substances that meet certain criteria as regulated substances; for example, to be listed, the substance must be a saturated HFC that has an exchange value greater than 53 (which is also the lowest exchange value for a regulated substance listed in subsection (c)(1) of the Act) (42 U.S.C. 7675(c)(3)).

The regulated substances addressed in this proposal may be used neat (*i.e.,* as a single component substance) or in a blend with other substances, which may include other regulated substances and/or substitutes for regulated substances. The requirements proposed in this rulemaking for regulated substances would apply regardless of whether the regulated substance is used neat or in blend. In taking this approach, EPA is not proposing that a blend that uses one or more regulated substances is itself a regulated substance. Rather, the Agency is proposing to regulate the regulated substance(s) used within a ''blend of substances'' (42 U.S.C. 7675(c)(3)(B)(ii)), such that the proposed requirements would also affect equipment that uses regulated substances in blends. This is consistent with approaches that the Agency has taken under the Allocation Framework Rule (86 FR 55133, 55142, October 5, 2021) and proposed for the Technology Transitions Rule (87 FR 76744, 76753, December 15, 2022).[11] Furthermore, subsection (h)(1) requires EPA to promulgate regulations addressing certain practices, processes, or activities involving, among other things, a regulated substance or a substitute for a regulated substance (*see* 42 U.S.C. 7675(h)(1)(A)–(B)). Consistent with those provisions, regulatory requirements under subsection (h) may also apply with respect to substitutes for regulated substances, regardless of whether the substitute is used neat or in a blend. In taking this approach for substitutes for a regulated substance, EPA is not proposing that a blend that uses one or more such substitutes that are so regulated would be designated a regulated substance under subsection (c) of the Act, nor that the substitute would be so designated. Rather, such substitutes would simply be addressed, as appropriate, under the regulations implementing subsection (h).

Subsection (h) of the AIM Act is entitled ''Management of regulated substances.'' For purposes of maximizing reclaiming and minimizing releases of HFCs from equipment and ensuring the safety of technicians and consumers, subsection (h)(1) directs EPA to promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves: a regulated substance, a substitute for a regulated substance, the reclaiming of a regulated substance used as a refrigerant, or the reclaiming of a substitute for a regulated substance used as a refrigerant (42 U.S.C. 7675(h)(1)). Subsection (h)(1) further provides that this includes requiring, where appropriate, that any such servicing, repair, disposal, or installation be performed by a trained technician meeting minimum standards, as determined by EPA.

Under subsection (h)(2)(A) of the AIM Act, the Agency ''shall consider the use of authority available . . . under this section to increase opportunities for the reclaiming of regulated substances used as refrigerants.'' Subsection (h)(2)(B) of the Act further provides that a ''regulated substance used as a refrigerant that is recovered shall be reclaimed before the regulated substance is sold or transferred to a new owner, except where the recovered regulated substance is sold or transferred to a new owner solely for the purposes of being reclaimed or destroyed.''

Further, subsection (h)(3) provides that in promulgating regulations to carry out subsection (h), EPA may coordinate those regulations with ''any other regulations promulgated by the [EPA] that involve—(A) the same or a similar practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment; or (B) reclaiming.'' EPA interprets this provision of the AIM Act as leaving the Agency discretion as to whether or not to coordinate regulations under subsection (h) with other EPA regulations, as well as with discretion to consider the particular circumstances in which it is appropriate to undertake such coordination. Congress did not define the term ''coordinate'' in the AIM Act. EPA interprets the term, as used in this context, as encompassing a variety of forms of coordination that could potentially be used for the specified types of regulatory provisions, and interprets (h)(3) as conveying discretion

[7] EPA views ''reclaim,'' ''reclaiming,'' and ''reclamation'' as interchangeable terms.

[8] As noted previously in this action, ''regulated substance'' and ''HFC'' are used interchangeably in this action.

[9] EPA has determined that the exchange values included in subsection (c) of the AIM Act are identical to the global warming potentials (GWPs) included in the Intergovernmental Panel on Climate Change (IPCC) (2007). EPA uses the terms ''global warming potential'' and ''exchange value'' interchangeably in this proposal.

[10] IPCC (2007): Solomon, S., D. Qin, M. Manning, R.B. Alley, T. Berntsen, N.L. Bindoff, Z. Chen, A. Chidthaisong, J.M. Gregory, G.C. Hegerl, M. Heimann, B. Hewitson, B.J. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, R. Somerville, T.F. Stocker, P. Whetton, R.A. Wood and D. Wratt, 2007: Technical Summary. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA *https://www.ipcc.ch/report/ar4/wg1.*

[11] In affirming this aspect of the HFC Allocation Framework Rule, the D.C. Circuit held that ''EPA has statutory authority to regulate HFCs within blends . . . because an HFC within a blend remains a regulated HFC under the Act.'' *Heating, Air Conditioning & Refrigeration Distributors Int'l* v. *EPA,* 71 F.4th 59, 64 (D.C. Cir. 2023).

to EPA to select the form or forms of coordination that are appropriate for the particular circumstances and regulatory provisions under consideration in a given action.

In this proposal, EPA describes where and whether we are coordinating with regulations that involve the same or similar practices, processes, or activities regarding the servicing, repair, disposal, or installation of equipment or reclaiming, and our rationale on the appropriateness of coordinating with these regulations. For example, coordination could include establishing parallel requirements under subsection (h) as in another regulatory regime so that a similar practice, process, or activity in similar equipment is held to similar standards, where appropriate. It could also include deciding not to establish requirements under subsection (h) in certain situations, such as when an existing requirement already applies to a similar practice, process, or activity under another set of regulations that EPA views as adequate to also address the purposes of subsection (h). Coordination could also mean coordinating rulemaking schedules or timing for certain requirements under subsection (h) that cover a similar practice, process, or activity as covered in a previous regulation and would meet the purposes of subsection (h). Finally, coordination may also mean coordinating the requirements under subsection (h) with revisions to regulations under other statutory authorities that address related practices, processes, or activities, with the goal of developing independent regulatory regimes that operate well together to achieve their stated goals.

Subsection (h)(4) expressly states that any rulemaking under subsection (h) shall not apply to a regulated substance or a substitute for a regulated substance that is contained in a foam. Thus, the requirements proposed in this rulemaking would not apply to regulated substances or substitutes for regulated substances when those substances are contained in foams.

Finally, subsection (h)(5) provides that, subject to availability of appropriations, EPA shall establish a grant program to award small business grants for the purchase of new specialized equipment for the recycling, recovery, or reclamation of a substitute for a regulated substance, including the purchase of approved refrigerant recycling equipment for recycling, recovery, or reclamation in the service or repair of a motor vehicle air conditioner (MVAC) systems. Funds have not been appropriated for this grant program. The establishment of this program is outside the scope of this rulemaking and EPA intends to address it in a future action.

Through this rulemaking, EPA is proposing to establish an HFC management program that includes requirements for:

- Leak repair for certain equipment that contain HFC refrigerants or their substitutes, as applicable,
- ALD systems,
- Use of reclaimed HFCs in certain RACHP subsectors,
- The fire suppression sector,
- Recovery of HFCs from cylinders, and
- Container tracking.

Under subsection (h)(1), EPA is directed to promulgate certain regulations for ''purposes of maximizing the reclaiming and minimizing the release of a regulated substance from equipment and ensuring the safety of technicians and consumers.'' Subsection (h) further specifies that those regulations are to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves: a regulated substance, a substitute for a regulated substance, the reclaiming of a regulated substance used as a refrigerant, or the reclaiming of a substitute for a regulated substance used as a refrigerant. Together, the proposed provisions as outlined above in this section and explained in greater detail in the relevant sections of this NPRM are aimed at achieving those three purposes described in subsection (h)(1) (*i.e.,* (1) maximizing the reclaiming, (2) minimizing the release of a regulated substance from equipment, and (3) ensuring the safety of technicians and consumers), while also being consistent with the scope of regulatory authority under that provision. As EPA interprets the statutory text, the suite of regulations established under subsection (h)(1) of the Act, taken together, would be focused on serving these purposes, though the individual regulatory provisions under subsection (h)(1) need not each connect to all three purposes. This interpretation is integral to establishing an effective regulatory program, as some regulatory provisions that might be considered under (h)(1) may be highly efficacious at addressing one of the regulatory purposes but not address the other two, or alternatively, may be important to support the functioning of the regulatory program as a whole, but not be focused on any of the specific purposes. Accordingly, this understanding of the statutory text will support EPA's ability to develop regulations that work together to help achieve the statutory purposes.

Together the provisions proposed in this action would serve the purposes described in (h)(1), with certain provisions more geared towards one or two of the purposes identified in subsection (h)(1). For example, the provisions related to leak repair as proposed in this action are directed at the purpose of minimizing the release of a regulated substance, but also help serve the purpose of maximizing the reclaiming of a regulated substance. Those proposed provisions would set requirements for when and how equipment must be serviced and leaks in equipment must be repaired. Taking these actions would minimize the release of regulated substances through such leaks, as the sooner a leak is found and repaired, the less HFC will be released from that leak. Further, by limiting the amount of regulated substances released from leaks in equipment, the opportunity to recover and subsequently reclaim these regulated substances increases. Thus, the proposed provisions related to leak repair also help serve the purpose of maximizing the reclaiming of regulated substances.

Another example is the proposed provisions for the use of ALD systems which would help address the purposes articulated in subsection (h)(1) similarly. In general, ALD systems would alert an owner or operator of leaks in equipment sooner than discovering a leak due to decreased performance by the equipment. Identifying and repairing leaks sooner as a result of detecting the leak with an ALD system would further limit the amount of regulated substance released from the leak and maintain more of the regulated substance within the equipment, where it would be available for eventual recovery and reclamation.

In addition to proposing requirements for the management of HFCs and substitutes, this proposal includes provisions designed to support enforcement and compliance, including recordkeeping and reporting. As noted earlier in this section, subsection (k)(1)(C) of the AIM Act states that CAA section 114 applies to the AIM Act and rules promulgated under it as if the AIM Act were included in CAA Title VI. Thus, CAA section 114, which provides authority to the EPA Administrator to require recordkeeping and reporting in carrying out provisions of the CAA, also applies to and supports this rulemaking. These provisions may be examples of provisions that are integral to establishing an effective regulatory program, and thus are important to the overall efficacy of the HFC management program at achieving the purposes

articulated in subsection (h)(1), even if they may be less directly connected to those purposes if viewed in isolation.

In this action, we are also proposing alternative RCRA standards for spent ignitable refrigerants being recycled for reuse. These proposed standards would not be part of the regulations under subsection (h)(1) of the AIM Act. Rather, this would involve regulatory changes to 40 CFR parts 261–271, and those changes are proposed under the authority of sections 2002, 3001, 3002, 3003, 3004, 3006, and 3010 of the Solid Waste Disposal Act of 1965, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). This statute is commonly referred to as ''RCRA.''

III. Background

A. What are HFCs?

HFCs are anthropogenic [12] fluorinated chemicals that have no known natural sources. HFCs are used in a variety of applications such as refrigeration and air conditioning, foam blowing agents, solvents, aerosols, and fire suppression. HFCs are potent greenhouse gases (GHGs) with 100-year GWPs (a measure of the relative climatic impact of a GHG) that can be hundreds to thousands of times more potent than CO_2.

HFC use and emissions [13] have been growing worldwide due to the global phaseout of ozone-depleting substances (ODS) under the *Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol) and the increasing use of refrigeration and air-conditioning equipment globally. HFC emissions had previously been projected to increase substantially over the next several decades. In 2016, in Kigali, Rwanda, countries agreed to adopt an amendment to the Montreal Protocol, known as the Kigali Amendment, which provides for a global phasedown of the production and consumption of HFCs. The United States ratified the Kigali Amendment on October 31, 2022. Global adherence to the Kigali Amendment would substantially reduce future emissions, leading to a peaking of HFC emissions before 2040.[14] [15]

Atmospheric observations of most currently measured HFCs confirm their abundances are increasing at accelerating rates. Total emissions of HFCs increased by 19 percent from 2016 to 2020 and the four most abundant HFCs in the atmosphere, in GWP-weighted terms, are HFC–134a, HFC–125, HFC–23, and HFC–143a.[16]

In 2020, HFCs excluding HFC–23 accounted for a radiative forcing [17] of 0.037 W/m^2. This is an increase of nearly a third in total HFC forcing relative to 2016. This radiative forcing was projected to increase by an order of magnitude to 0.25 W/m^2 by 2050.[18] Full implementation of the Kigali Amendment is expected to reduce the future radiative forcing due to HFCs (excluding HFC–23) to 0.13 W/m^2 in 2050, which is a reduction of about 50 percent compared with the radiative forcing projected in the business-as-usual scenario of uncontrolled HFCs.[19]

There are hundreds of possible HFC compounds. The 18 HFCs listed as regulated substances by the AIM Act are some of the most commonly used HFCs (neat and in blends) and have high impacts as measured by the quantity of each substance emitted multiplied by their respective GWPs. These 18 HFCs are all saturated, meaning they have only single bonds between their atoms and therefore have longer atmospheric lifetimes.

In the United States, HFCs are used primarily in refrigeration and air-conditioning equipment in homes, commercial buildings, and industrial operations (approximately 75 percent of total HFC use in 2018) and in air conditioning in vehicles and refrigerated transport (approximately 8 percent). Smaller amounts are used in foam products (approximately 11 percent), aerosols (approximately 4 percent), fire protection systems (approximately 1 percent), and solvents (approximately 1 percent).[20]

EPA estimated in its final rule, Allocation Framework Rule (86 FR 55116, October 5, 2021) as updated under the final rule, Allowance Allocation Methodology for 2024 and Later Years (''2024 Allocation Rule'') (88 FR 46836; July 20, 2023), that phasing down HFC production and consumption according to the schedule provided in the AIM Act will avoid cumulative consumption of 3,156 million metric tons of exchange value equivalent (MMTEVe) of HFCs in the United States for the years 2022 through 2036. That estimate included both consumption as defined in 40 CFR 84.3—*i.e.,* with respect to a regulated substance, bulk production plus bulk imports minus bulk exports—and, although not requiring AIM Act allowances, the amount in imported products containing a regulated substance, less the amount in exported products containing a regulated substance. Annual avoided consumption was estimated at 42 $MMTCO_2e$ in 2022 and 282 $MMTCO_2e$ in 2036. In order to calculate the climate benefits associated with consumption abatement, the consumption changes were expressed in terms of emissions reductions. EPA estimated that for the years 2022–2050, the HFC phasedown will avoid emissions of 4,560 $MMTCO_2e$ of HFCs in the United States. The annual avoided emissions are estimated at 22 $MMTCO_2e$ in the year 2022 and 171 $MMTCO_2e$ in 2036. More information

[12] While the overwhelming majority of HFC production is intentional, EPA is aware that HFC–23 can be a byproduct associated with the production of other chemicals, including but not limited to hydrochlorofluorocarbon (HCFC)-22.

[13] World Meteorological Organization (WMO), Scientific Assessment of Ozone Depletion: 2022, GAW Report No. 278, 509 pp., WMO, Geneva, Switzerland, 2022. Available at: *https://ozone.unep.org/system/files/documents/Scientific-Assessment-of-Ozone-Depletion-2022.pdf.*

[14] Ibid.

[15] A recent study estimated that global compliance with the Kigali Amendment is expected to lower 2050 annual emissions by 3.0–4.4 Million Metric Tons of Carbon Dioxide Equivalent ($MMTCO_2e$). Guus J.M. Velders et al. Projections of hydrofluorocarbon (HFC) emissions and the resulting global warming based on recent trends in observed abundances and current policies. Atmos. Chem. Phys., 22, 6087–6101, 2022. Available at: *https://doi.org/10.5194/acp-22-6087-2022.*

[16] WMO, 2022.

[17] Radiative forcing is expressed in units of watts per square meter (W/m^2) and is defined by the IPCC as ''a measure of the influence a factor has in altering the balance of incoming and outgoing energy in the Earth-atmosphere system and is an index of the importance of the factor as a potential climate change mechanism.'' IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III 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. *https://www.ipcc.ch/report/ar4/syr/.*

[18] Guus J.M. Velders, David W. Fahey, John S. Daniel, Stephen O. Andersen, Mack McFarland, Future atmospheric abundances and climate forcings from scenarios of global and regional hydrofluorocarbon (HFCs) emissions, Atmospheric Environment, doi:10.1016/j.atmosenv.2015.10.071, 2015.

[19] Ibid.

[20] Calculations based on EPA's Vintaging Model, which estimates the annual chemical emissions from industry sectors that historically used ODS, including refrigeration and air conditioning, foam blowing agents, solvents, aerosols, and fire suppression. The model uses information on the market size and growth for each end use, as well as a history and projections of the market transition from ODS to substitutes. The model tracks emissions of annual ''vintages'' of new equipment that enter into operation by incorporating information on estimates of the quantity of equipment or products sold, serviced, and retired or converted each year, and the quantity of the compound required to manufacture, charge, and/or maintain the equipment. Additional information on these estimates is available in U.S. EPA, April 2016. EPA Report EPA–430–R–16–002. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014. Available at: *https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2014.*

regarding these estimates is provided in the Allocation Framework Rule RIA and the RIA addendum for the 2024 Allocation Rule, which can be found in the docket for this proposal.

B. How do HFCs affect public health and welfare?

Elevated concentrations of GHGs including HFCs are and have been warming the planet, leading to changes in the Earth's climate including changes in the frequency and intensity of heat waves, precipitation, and extreme weather events; rising seas; and retreating snow and ice. The changes taking place in the atmosphere as a result of the well-documented buildup of GHGs due to human activities are changing the climate at a pace and scale that threatens human health, society, and the natural environment. In this section, EPA is providing some scientific background on climate change to offer additional context for this rulemaking and to help the public understand the environmental impacts of GHGs such as HFCs.

Extensive additional information on climate change is available in the scientific assessments and the EPA documents that are briefly described in this section, as well as in the technical and scientific information supporting them.

One of those documents is EPA's 2009 Endangerment and Cause or Contribute Findings for Greenhouse Gases Under section 202(a) of the CAA (74 FR 66496, December 15, 2009).[21] In the 2009 Endangerment Finding, the Administrator found under CAA section 202(a) that elevated atmospheric concentrations of six key well-mixed GHGs—CO_2, methane (CH_4), nitrous oxide (N_2O), HFCs, perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—''may reasonably be anticipated to endanger the public health and welfare of current and future generations'' (74 FR 66523, December 15, 2009), and the science and observed changes have confirmed and strengthened the understanding and concerns regarding the climate risks considered in the Finding. The 2009 Endangerment Finding, together with the extensive scientific and technical evidence in the supporting record, documented that climate change caused by human emissions of GHGs (including HFCs) threatens the public health of the population of the United States. It explained that by raising average temperatures, climate change increases the likelihood of heat waves, which are associated with increased deaths and illnesses (74 FR 66497, December 15, 2009). While climate change also likely reduces cold-related mortality, evidence indicates that the increases in heat mortality will be larger than the decreases in cold mortality in the United States (74 FR 66525, December 15, 2009). The 2009 Endangerment Finding further explained that, compared with a future without climate change, climate change is expected to increase tropospheric ozone pollution over broad areas of the United States, including in the largest metropolitan areas with the worst tropospheric ozone problems, and thereby increase the risk of adverse effects on public health (74 FR 66525, December 15, 2009). Climate change is also expected to cause more intense hurricanes and more frequent and intense storms of other types and heavy precipitation, with impacts on other areas of public health, such as the potential for increased deaths, injuries, infectious and waterborne diseases, and stress-related disorders (74 FR 66525, December 15, 2009). Climate change is also expected to cause more intense hurricanes and more frequent and intense storms of other types and heavy precipitation, with impacts on other areas of public health, such as the potential for increased deaths, injuries, infectious and waterborne diseases, and stress-related disorders (74 FR 66525, December 15, 2009). Children, the elderly, and the poor are among the most vulnerable to these climate-related health effects (74 FR 66498, December 15, 2009).

The 2009 Endangerment Finding also documented, together with the extensive scientific and technical evidence in the supporting record, that climate change touches nearly every aspect of public welfare [22] in the United States, including: changes in water supply and quality due to increased frequency of drought and extreme rainfall events; increased risk of storm surge and flooding in coastal areas and land loss due to inundation; increases in peak electricity demand and risks to electricity infrastructure; predominantly negative consequences for biodiversity and the provisioning of ecosystem goods and services; and the potential for significant agricultural disruptions and crop failures (though offset to some extent by carbon fertilization). These impacts are also global and may exacerbate problems outside the United States that raise humanitarian, trade, and national security issues for the United States (74 FR 66530, December 15, 2009).

In 2016, the Administrator similarly issued Endangerment and Cause or Contribute Findings for GHG emissions from aircraft under CAA section 231(a)(2)(A)(81 FR 54422, August 15, 2016).[23] In the 2016 Endangerment Finding, the Administrator found that the body of scientific evidence amassed in the record for the 2009 Endangerment Finding compellingly supported a similar endangerment finding under CAA section 231(a)(2)(A) and also found that the science assessments released between the 2009 and the 2016 Findings ''strengthen and further support the judgment that GHGs in the atmosphere may reasonably be anticipated to endanger the public health and welfare of current and future generations'' (81 FR 54424, August 15, 2016).

Since the 2016 Endangerment Finding, the climate has continued to change, with new records being set for several climate indicators such as global average surface temperatures, GHG concentrations, and sea level rise. Moreover, heavy precipitation events have increased in the Eastern U.S. while agricultural and ecological drought has increased in the Western U.S. along with more intense and larger wildfires.[24] These and other trends are examples of the risks discussed in the 2009 and 2016 Endangerment Findings that have already been experienced. Additionally, major scientific assessments continue to demonstrate advances in our understanding of the climate system and the impacts that GHGs have on public health and welfare both for current and future generations. According to the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report, ''it is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.'' [25] These

[21] In describing these 2009 Findings in this proposal, EPA is neither reopening nor revisiting them.

[22] The CAA states in section 302(h) that ''[a]ll language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants.'' 42 U.S.C. 7602(h).

[23] In describing these 2016 Findings in this proposal, EPA is neither reopening nor revisiting them.

[24] An additional resource for indicators can be found at *https://www.epa.gov/climate-indicators.*

[25] IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Pe´an, S. Berger, N.

Continued

updated observations and projections document the rapid rate of current and future climate change both globally and in the United States.[26] [27] [28] [29].

C. What refrigerant management programs has EPA already established under the Clean Air Act?

EPA is developing regulations that are designed to establish a comprehensive HFC management program that maximizes the reclaiming and minimizes the release of HFCs while coordinating these efforts with other similar programs. EPA has an extensive history under CAA Title VI regulating the sectors in which HFCs and substitutes are typically used, including where they are used as refrigerants and for other purposes. For example, EPA has regulated stationary refrigeration applications under CAA section 608, MVACs under CAA section 609, and has evaluated alternative substances for refrigeration, air conditioning, and other uses under the Significant New Alternatives Policy (SNAP) program under CAA section 612.

1. National Recycling and Emission Reduction Program (CAA Section 608)

CAA section 608, titled ''National Recycling and Emission Reduction Program,'' has three main components. First, section 608(a) requires EPA to establish standards and requirements regarding the use and disposal of class I and class II substances.[30] The second component, section 608(b), requires that the regulations issued pursuant to subsection (a) contain requirements for the safe disposal of class I and class II substances. The third component, section 608(c), prohibits the knowing venting, release, or disposal of ODS refrigerants [31] and their substitutes [32] in the course of maintaining, servicing, repairing, or disposing of appliances or industrial process refrigeration (IPR). EPA refers to this third component as the ''venting prohibition.'' Section 608(c)(1) establishes the venting prohibition for ODS refrigerants effective July 1, 1992, and it includes an exemption from this prohibition for ''[d]e minimis releases associated with good faith attempts to recapture and recycle or safely dispose'' any such substance. Section 608(c)(2) extends 608(c)(1) to substitute refrigerants, effective November 15, 1995. Section 608(c)(2) also includes a provision that allows the Administrator to exempt a substitute refrigerant from the venting prohibition if he or she determines that such venting, release, or disposal of a substitute refrigerant ''does not pose a threat to the environment.''

EPA first issued regulations under CAA section 608 on May 14, 1993 (58 FR 28660, ''1993 Rule''), to establish the national refrigerant management program for ODS refrigerants recovered during the service, repair, or disposal of air conditioning and refrigeration appliances. Since then, EPA has revised these regulations, which are found at 40 CFR part 82, subpart F (''subpart F''), through subsequent rulemakings published between 1994 and 2020. Regulations issued under CAA section 608 include, among other things, the venting prohibition and sales restrictions for refrigerants (40 CFR 82.154); safe disposal of appliances (40 CFR 82.155); proper practices for the evacuation of refrigerant from appliances (40 CFR 82.156); required practices for appliance maintenance and leak repair (40 CFR 82.157); standards for recovery and/or recycling equipment (40 CFR 82.158); technician and reclaimer certification requirements (40 CFR 82.161 and 82.164, respectively); and reporting and recordkeeping requirements (40 CFR 82.166). Appendices A–E at 40 CFR part 82, subpart F provide, among other things, specifications for refrigerants, performance standards for refrigerant recovery, recycling, and/or reclaiming equipment, and standards for becoming a certifying program for technicians.

As it pertains to regulations under section 608 of the CAA, EPA is using the term ''non-exempt substitute'' in this document to refer to substitute refrigerants that have not been exempted from the venting prohibition under CAA section 608(c)(2) and § 82.154(a) in the relevant end-use. Similarly, the term ''exempt substitute'' refers to a substitute refrigerant that has been exempted from the venting prohibition under section 608(c)(2) and § 82.154(a) in the relevant end-use. A few exempt substitutes have been exempted from the venting prohibition in all applications. Notably, in 2016, EPA published a rule (81 FR 82272, November 18, 2016) updating existing refrigerant management requirements and extending the full set of the subpart F refrigerant management requirements, which prior to that rule applied only to ODS refrigerants,[33] to non-exempt substitute refrigerants, such as HFCs and hydrofluoroolefins (HFOs). Among the subpart F requirements extended to non-exempt substitute refrigerants in the 2016 CAA section 608 Rule were provisions that restrict the servicing of appliances and the sale of refrigerant to certified technicians, specify the proper evacuation levels before opening an appliance, require the use of certified refrigerant recovery and/or recycling equipment, require that refrigerant be recovered from appliances prior to disposal, require that appliances have a servicing aperture or process stub to facilitate refrigerant recovery, require that refrigerant reclaimers be certified to reclaim and sell used refrigerant, and establish standards for technician certification programs, recovery equipment, and established technical standards for the purity of reclaimed refrigerant. The 2016 CAA section 608 Rule also extended the appliance maintenance and leak repair provisions, currently codified at 40 CFR 82.157, to appliances that contain 50 or more pounds of non-exempt substitute refrigerant. The 2016 CAA section 608 Rule additionally made numerous revisions to improve the efficacy of the refrigerant management program as a whole, such as revisions of regulatory provisions for increased clarity and readability, and removal of provisions that had become obsolete.

EPA reviewed the 2016 CAA section 608 Rule, focusing in particular on whether the Agency had the statutory authority to extend the full set of

Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press: 4.

[26] USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018. Available at: *https://nca2018.globalchange.gov*.

[27] IPCC, 2021.

[28] National Academies of Sciences, Engineering, and Medicine, 2019. Climate Change and Ecosystems. Washington, DC: The National Academies Press. Available at: *https://doi.org/10.17226/25504*.

[29] NOAA National Centers for Environmental Information, Monthly Global Climate Report for Annual 2022, published online January 2023, retrieved on March 1, 2023 from *https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202213*.

[30] A class I or class II substance is an ozone-depleting substance (ODS) listed at 40 CFR part 82, subpart A, appendix A or appendix B, respectively. This document refers to class I and class II substances collectively as ozone-depleting substances, or ODS.

[31] The term ''ODS refrigerant'' as used in this document refers to any refrigerant or refrigerant blend in which one or more of the components is a class I or class II substance.

[32] The term ''substitute'' for the purposes of the regulations under section 608 of the CAA is defined at 40 CFR 82.152.

[33] The only 40 CFR part 82, subpart F requirements that applied to substitute refrigerants prior to the 2016 CAA section 608 Rule were the venting prohibition and certain exemptions from that prohibition, as set forth in § 82.154(a).

subpart F refrigerant management regulations to non-exempt substitute refrigerants, such as HFCs and HFOs. In 2018, EPA proposed to withdraw the extension of the provisions of 40 CFR 82.157 to appliances using only non-exempt substitute refrigerants.[34] (83 FR 49332, October 1, 2018). In 2020, EPA published a final rule (85 FR 14150, March 11, 2020) withdrawing only the extension of the leak repair requirements—including requirements for repairing leaks, conducting leak inspections, and keeping applicable records—for appliances containing only such substitute refrigerants. Other subpart F provisions that were extended to substitute refrigerants in the 2016 CAA section 608 Rule, as mentioned above, were left in place for appliances containing only ODS substitute refrigerants. There were no changes to any of the regulatory requirements for ODS in the 2020 CAA section 608 Rule.

Petitions for judicial review were filed on the 2016 CAA section 608 Rule and separately on the 2020 CAA section 608 Rule. Two industry coalitions, National Environmental Development Association's Clean Air Project (NEDA/CAP) and the Air Permitting Forum (APF), filed petitions for judicial review of the 2016 CAA section 608 Rule in the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) in 2017. APF also filed an administrative petition for reconsideration before EPA regarding the 2016 CAA section 608 Rule.[35] In 2020, the Natural Resources Defense Council (NRDC) and a group of state and municipal petitioners [36] filed petitions for judicial review of the 2020 CAA section 608 Rule in the D.C. Circuit. NEDA/CAP also filed an administrative petition before EPA regarding the 2020 CAA section 608 Rule, which is styled as a petition for reconsideration or in the alternative a petition for rulemaking.[37] These four petitions for review were all consolidated under Case No. 20–1150 (D.C. Cir.) in July of 2020, and in August of 2020 the court severed four issues raised in NEDA/CAP and APF's administrative petitions for reconsideration and assigned them to a different case (Case No. 20–1309, D.C. Cir.). Both cases are now being held in abeyance.

On January 20, 2021, President Biden issued an ''Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis,'' which directed review of certain agency actions taken between January 20, 2017, and January 20, 2021. Exec. Order No. 13,990, 86 FR 7037 (Jan. 20, 2021). The 2020 CAA section 608 Rule was one of the actions subject to review under this Executive Order. In light of both EPA's review of the 2020 CAA section 608 Rule consistent with the Executive Order and the Agency's consideration of subsection (h) of the AIM Act, EPA has decided to initiate a rulemaking that, among other things, would involve evaluating the application of leak repair requirements to appliances using HFCs and substitute refrigerants under subsection (h). Because this proposed action is rooted in EPA's authority under the AIM Act, EPA is not reopening or otherwise addressing the question of its authority for such requirements under the CAA in this proposal.

2. Motor Vehicle Air Conditioning Servicing Program (CAA Section 609)

CAA section 609 directs EPA to issue regulations establishing standards and requirements for the servicing of MVACs. For purposes of the regulations implementing CAA section 609, ''motor vehicle air conditioners'' [38] is defined at 40 CFR 82.32(d) as mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. This definition further states that it is not intended to encompass certain hermetically sealed refrigeration systems used on motor vehicles for refrigerated cargo and the air conditioning systems on passenger buses. For purposes of the section 609 regulations, motor vehicle is defined at 40 CFR 82.32(c) as any vehicle which is self-propelled and designed for transporting persons or property on a street or highway, including but not limited to passenger cars, light-duty vehicles, and heavy-duty (HD) vehicles. This definition further provides that it does not include a vehicle where final assembly of the vehicle has not been completed by the original equipment manufacturer (OEM).

Under CAA section 609 and regulations that implement it, no person repairing or servicing motor vehicles for consideration (*e.g.,* payment or bartering) may perform any service on an MVAC that involves the refrigerant [39] without properly using approved refrigerant recovery or recovery and recycling equipment, and no such person may perform such service for consideration unless such person has been properly trained and certified. Section 609 also contains restrictions on the sale or distribution, or offer for sale or distribution, of class I and class II substances suitable for use as a refrigerant in MVACs in containers of less than 20 pounds, except to a person performing service for consideration on MVAC systems.

Regulations issued under CAA section 609, codified at 40 CFR part 82, subpart B, include, among other things, prohibited and required practices for persons repairing and servicing MVACs for consideration (40 CFR 82.34); requirements for refrigerant handling equipment (40 CFR 82.36); approval processes for independent standards testing organizations (40 CFR 82.38); requirements for certifications that any person servicing or repairing MVACs for consideration must submit to EPA, and related recordkeeping requirements (40 CFR 82.42). Appendices A–F at 40 CFR part 82, subpart B, provide minimum operating requirements for equipment used for the recovery, recycling and/or recharging of refrigerant used in MVACs.

In 1992, EPA published a rule (57 FR 31242, July 14, 1992) under CAA section 609 establishing standards and requirements for servicing of MVACs and restricting the sale of small containers of ODS. The regulations, which appear in 40 CFR part 82, subpart B, require persons who repair or service MVACs for consideration to be certified in refrigerant recovery and recycling and to properly use approved equipment when performing service involving the refrigerant. Consistent with the definition in CAA section 609(b)(1), ''refrigerant'' is defined in

[34] Ozone-depleting refrigerants and appliances that contain or use any amount of ODS continue to be subject to all applicable subpart F requirements, including those in 40 CFR 82.157.

[35] APF Petition for Reconsideration, January 2017, available: *https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0453-0228.*

[36] The state and municipal petitioners are the State of New York, State of Connecticut, State of Illinois, State of Maine, State of Maryland, State of Minnesota, State of New Jersey, State of Oregon, Commonwealth of Virginia, State of Washington, District of Columbia, and City of New York.

[37] NEDA/CAP Petitions for Reconsideration/Petition for Rulemaking, May 2020, available: *https://www.regulations.gov/document?D=EPA-HQ-OAR-2017-0629-0345.*

[38] A related definition for ''MVAC-like appliance'' is found at 40 CFR 82.152: MVAC-like appliance means a mechanical vapor compression, open-drive compressor appliance with a full charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of off-road vehicles or equipment. This includes, but is not limited to, the air-conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using R–22 refrigerant.

[39] Section 609(b)(1) defines the term ''refrigerant,'' ''[a]s used in this section'', to mean ''any class I or class II substance used in a motor vehicle air conditioner. Effective 5 years after November 15, 1990, the term 'refrigerant' shall also include any substitute substance.'' EPA's implementing regulations include a parallel definition of this term at 40 CFR 82.32(f).

subpart B as any class I or class II substance used in MVACs, and to include any substitute substance effective November 15, 1995. The 1992 CAA section 609 Rule also defined approved refrigerant recycling equipment as equipment certified by the Administrator or an approved organization as meeting either one of the standards in 40 CFR 82.36. Such equipment extracts and recycles refrigerant or extracts but does not recycle refrigerant, allowing that refrigerant to be subsequently recycled on-site or to be sent off-site for reclamation.[40] EPA based the regulatory equipment standards in subpart B on those developed by SAE. They cover service procedures for dichlorodifluoromethane (CFC–12 or R–12) recover/recycle equipment (SAE J1989, issued in October 1989), test procedures to evaluate R–12 recover/recycle equipment (SAE J1990, issued in October 1989 and revised in 1991) and a purity standard for recycled R–12 refrigerant (SAE J1991, issued in October 1989). Only equipment certified to meet the standards set forth in appendix A at 40 CFR part 82, subpart B, or that meet the criteria for substantially identical equipment, was approved under CAA section 609 for use in the servicing of MVACs at that time.

EPA issued another rule under CAA section 609 in 1997 (62 FR 68026, December 30, 1997) in response to the increasing use of substitute refrigerants, particularly 1,1,1,2-tetrafluoroethane (HFC–134a or R–134a). The 1997 CAA section 609 Rule established standards and requirements for the servicing of MVACs that use any refrigerant other than R–12. The rule also stated that refrigerant (whether R–12 or a substitute) recovered from motor vehicles at motor vehicle disposal facilities may be re-used in the MVAC service sector only if it has been properly recovered and recycled by persons who are either employees, owners, or operators of the facilities, or technicians certified under CAA section 609, using approved equipment. This differs from the rules established under CAA section 608, in which no person may sell or distribute, or offer for sale or distribution, used refrigerant (including both ODS and non-exempt substitutes such as HFCs) unless it has first been reclaimed by a certified reclaimer (40 CFR 82.154(d)). The 1997 CAA section 609 Rule also established conditions under which owners and operators of motor vehicle disposal facilities may sell refrigerant recovered from such vehicles to technicians certified under CAA section 609.

3. Significant New Alternatives Policy Program (CAA Section 612)

EPA identifies and evaluates substitutes for ODS in certain industrial sectors, including RACHP; aerosols; and foams. To a very large extent, HFCs are used in the same sectors and subsectors as where ODS historically have been used. Under SNAP, EPA evaluates acceptability of substitutes for ODS based primarily on the potential human health and environmental risks, relative to other substances used for the same purpose. In so doing, EPA assesses atmospheric effects such as ozone depletion potential (ODP) and GWP, exposure assessments, toxicity data, flammability, and other environmental impacts. This assessment could take a wide range of forms, such as a theoretical evaluation of the properties of the substitute, a computer simulation of the substitute's performance in the sector or subsector, lab-scale (table-top) evaluations of the substitute, or equipment tests under various conditions.

IV. How is EPA proposing to regulate the management of HFCs and their substitutes?

As described in the following sections, EPA is proposing to establish a program for the management of HFCs under subsection (h) of the AIM Act that includes requirements regarding several topics, including leak repair requirements for certain refrigerant-containing appliances and use of ALD systems for certain equipment; use of reclaimed HFCs in certain sectors or subsectors for the initial charge or installation of equipment and for servicing and/or repair of existing equipment; the servicing, repair, disposal, or installation of fire suppression equipment that contains HFCs, as well as requirements related to technician training in the fire suppression sector; recovery of HFCs from cylinders; and container tracking for HFCs that could be used in the servicing, repair, and/or installation of equipment. EPA intends for the proposed provisions for these topics to be able to stand independently from one another and has designed them accordingly. For example, the proposed leak repair requirements for refrigerant-containing appliances are designed to operate independently from the proposed requirements for servicing, repair, disposal, or installation of fire suppression equipment.

A. What definitions is EPA proposing to implement under subsection (h)?

The Allocation Framework Rule (86 FR 55116, October 5, 2021) established regulatory definitions at 40 CFR part 84, subpart A (''subpart A'') to implement the framework for, and begin the regulatory phasedown of, HFCs under the AIM Act, and EPA has finalized certain revisions to the definitions section of subpart A at 40 CFR 84.3 (*see* 88 FR at 46836, July 20, 2023).[41] The proposed Technology Transitions Rule (87 FR 76738, December 15, 2022) would establish additional regulatory definitions in 40 CFR part 84, subpart B (''subpart B'') as part of its first proposed rulemaking related to implementing subsection (i) of the AIM Act, entitled ''Technology Transitions''. EPA anticipates that any final Technology Transitions rule under subsection (i) would be available in the docket for that action. To maintain consistency, except as otherwise explained in this proposal, EPA generally intends to use terms in this proposal, and in the new subpart C which is to be established by this rule, as they are defined in subpart A. Thus, for terms not defined in this subpart but that are defined in subpart A (40 CFR 84.3), the definitions in 40 CFR 84.3 would apply. Although EPA has not yet finalized the regulatory definitions that would apply under the Technology Transitions program, we also anticipate considering any regulatory definitions that may be finalized at subpart B as we are developing this rulemaking under subsection (h) of the AIM Act in an effort to promote consistency where appropriate. Accordingly, we anticipate that for terms that are not defined in subparts A or C, but that are defined in subpart B, the subpart B definitions would apply under the new subpart C.

EPA welcomes comment on all definitions proposed in this action and in particular, whether it should adopt different definitions for any of the terms defined in subpart A or proposed to be defined in subpart B for purposes of this rulemaking under subsection (h) of the AIM Act. While EPA is seeking

[40] Equipment that extracts and recycles refrigerant is referred to as recover/recycle equipment. Equipment that extracts but does not recycle refrigerant is referred to as equipment that recovers but does not recycle refrigerant, or as recover-only equipment.

[41] The proposed revisions in 40 CFR 84.3 are described in EPA's proposed Allowance Allocation Methodology for 2024 and Later Years rule, which was published on October 21, 2022 (87 FR 66372). This rulemaking focuses on the second phase of the HFC phasedown and, among other things, proposes to establish the allocation methodology for the ''general pool'' of HFC production and consumption allowances for 2024 through 2028. Available at: *https://www.epa.gov/climate-hfcs-reduction/proposed-rule-allowance-allocation-methodology-2024-and-later-years.*

comment on the definitions as proposed for the new subpart C, in this rulemaking, the Agency is not reopening, taking comment, or proposing to modify the definitions as finalized in subpart A or those proposed under subpart B. The Agency also welcomes comment on the terms that are newly defined for this proposed rule under subsection (h) as well as if there are any additional definitions that are needed to ensure a common understanding of terminology.

1. Which definitions is EPA proposing to adopt that parallel definitions in 40 CFR 82.152?

EPA is proposing to adopt definitions for the following terms that are similar to the definitions for the same terms used in 40 CFR 82.152, which includes definitions implementing section 608 of the CAA, with only limited changes as are needed to conform with the AIM Act or this proposed action. EPA is proposing to use this approach for these previously defined terms because they are used in the same or substantially similar manner as in 40 CFR part 82, subpart F. Specifically, 40 CFR 82.152 includes definitions implementing section 608 in CAA Title VI, which is relevant to HFC management. As noted in section III.A. of this proposal, HFCs were intentionally developed to replace class I and class II ODS and are used in the same applications. The approach EPA is proposing to implement subsection (h) of the AIM Act is informed by the Agency's experience with CAA Title VI. For example, EPA's current regulations under section 608 of the CAA require certain refrigerant management practices by reclaimers, those who buy or sell refrigerant, technicians, owners and operators of refrigerant-containing appliances, and others. Because many in the regulated community are subject to both the AIM Act and CAA section 608, maintaining the same or similar definitions, where consistent with AIM Act requirements, would provide consistency to those that have been using and are familiar with these terms from CAA section 608 regulations. Because EPA's authority under the AIM Act extends beyond the sectors covered by the regulations at 40 CFR part 82, subpart F, where it is necessary for clarity, EPA is specifying where these definitions specifically apply to the terms as they refer to refrigerant-containing appliances.

Comfort cooling means the refrigerant-containing appliances used for air conditioning to provide cooling in order to control heat and/or humidity in occupied facilities including but not limited to residential, office, and commercial buildings. Comfort cooling appliances include but are not limited to chillers, commercial split systems, and packaged roof-top units.

Commercial refrigeration means the refrigerant-containing appliances used in the retail food and cold storage warehouse subsectors. Retail food appliances include the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the refrigeration equipment used to store meat, produce, dairy products, and other perishable goods.

Component, as it relates to a refrigerant-containing appliance, means a part of the refrigerant circuit within an appliance including, but not limited to, compressors, condensers, evaporators, receivers, and all of its connections and subassemblies.

Custom-built means that the industrial process refrigeration equipment or any of its components cannot be purchased and/or installed without being uniquely designed, fabricated and/or assembled to satisfy a specific set of industrial process conditions.

Disposal, as it relates to a refrigerant-containing appliance, means the process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded refrigerant-containing appliance into or on any land or water;

(2) The disassembly of any refrigerant-containing appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water;

(3) The vandalism of any refrigerant-containing appliance such that the refrigerant is released into the environment or would be released into the environment if it had not been recovered prior to the destructive activity;

(4) The disassembly of any refrigerant-containing appliance for reuse of its component parts; or

(5) The recycling of any refrigerant-containing appliance for scrap.

As with all the proposed definitions, this proposed definition of ''disposal,'' as it relates to a refrigerant-containing appliance, is limited to how the term is would be used in 40 CFR part 84 subpart C.

Follow-up verification test, as it relates to a refrigerant-containing appliance, means those tests that involve checking the repairs to an appliance after a successful initial verification test and after the appliance has returned to normal operating characteristics and conditions to verify that the repairs were successful. Potential methods for follow-up verification tests include, but are not limited to, the use of soap bubbles as appropriate, electronic or ultrasonic leak detectors, pressure or vacuum tests, fluorescent dye and black light, infrared or near infrared tests, and handheld gas detection devices.

Full charge, as it relates to a refrigerant-containing appliance, means the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

(1) Use of the equipment manufacturer's determination of the full charge;

(2) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;

(3) Use of actual measurements of the amount of refrigerant added to or evacuated from the appliance, including for seasonal variances; and/or

(4) Use of an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge.

Industrial process refrigeration means complex customized refrigerant-containing appliances that are directly linked to the processes used in, for example, the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.

Initial verification test, as it relates to a refrigerant-containing appliance, means those leak tests that are conducted after the repair is finished to verify that a leak or leaks have been repaired before refrigerant is added back to the appliance.

Leak rate, as it relates to a refrigerant-containing appliance, means the rate at which an appliance is losing refrigerant, measured between refrigerant charges. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate must be calculated using one of the following methods. The same method

must be used for all appliances subject to the leak repair requirements located at an operating facility.

(1) Annualizing Method.

(i) *Step 1.* Take the number of pounds of refrigerant added to the appliance to return it to a full charge, whether in one addition or if multiple additions related to same leak, and divide it by the number of pounds of refrigerant the appliance normally contains at full charge;

(ii) *Step 2.* Take the shorter of the number of days that have passed since the last day refrigerant was added or 365 days and divide that number by 365 days;

(iii) *Step 3.* Take the number calculated in Step 1 and divide it by the number calculated in Step 2; and

(iv) *Step 4.* Multiply the number calculated in Step 3 by 100 to calculate a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365\ \textit{days/year}}{\textit{shorter of:}\ \#\ \text{days since refrigerant last added or 365 days}} \times 100\%$$

(2) Rolling Average Method.

(i) *Step 1.* Take the sum of the pounds of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year);

(ii) *Step 2.* Divide the result of Step 1 by the pounds of refrigerant the appliance normally contains at full charge; and

(iii) *Step 3.* Multiply the result of Step 2 by 100 to obtain a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added over past 365 days (or since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year)}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

As discussed in section IV.C.4. of this proposal, EPA is clarifying that owner/operators that wish to preemptively repair leaks and then run the leak rate calculation once refrigerant has been added to the repaired appliance for the follow-up verification test may do so, assuming all applicable time windows are adhered to. Additionally, owner/operators may use the amount of refrigerant lost in lieu of the amount of refrigerant added to run the leak rate calculation prior to adding refrigerant if they have a valid method of determining the amount of refrigerant lost (*e.g.,* evacuating the appliance and comparing the amount of refrigerant evacuated to the full charge).

Mothball, as it relates to a refrigerant-containing appliance, means to evacuate refrigerant from an appliance, or the affected isolated section or component of an appliance, to at least atmospheric pressure, and to temporarily shut down that appliance.

MVAC-like appliance means a mechanical vapor compression, open-drive compressor refrigerant-containing appliance with a full charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of off-road vehicles or equipment. This includes, but is not limited to, the air-conditioning equipment found on agricultural or construction vehicles. This definition is intended to have the same meaning as defined in 40 CFR 82.152.

This proposed definition deviates slightly from the definition of ''MVAC-like appliance'' at 40 CFR 82.152 to conform to the AIM Act grant of authority. As noted, this definition is intended to have the same meaning as defined 40 CFR 82.152.

Normal operating characteristics and conditions, as it relates to a refrigerant-containing appliance, means appliance operating temperatures, pressures, fluid flows, speeds, and other characteristics, including full charge of the appliance, that would be expected for a given process load and ambient condition during normal operation. Normal operating characteristics and conditions are marked by the absence of atypical conditions affecting the operation of the appliance.

Refrigerant circuit, as it relates to a refrigerant-containing appliance, means the parts of an appliance that are normally connected to each other (or are separated only by internal valves) and are designed to contain refrigerant.

Retire, as it relates to a refrigerant-containing appliance, means the removal of the refrigerant and the disassembly or impairment of the refrigerant circuit such that the appliance as a whole is rendered unusable by any person in the future.

Seasonal variance, as it relates to a refrigerant-containing appliance, means the removal of refrigerant from an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent addition of an amount that is less than or equal to the amount of refrigerant removed in the prior change in season, where both the removal and addition of refrigerant occurs within one consecutive 12-month period.

Technician, as it relates to any person who works with refrigerant-containing appliances, means any person who in the course of servicing, repair, or installation of a refrigerant-containing appliance (except MVACs) could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants into the environment. Technician also means any person who, in the course of disposal of a refrigerant-containing appliance (except small appliances as defined in 40 CFR 82.152, MVACs, and MVAC-like appliances), could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants from the appliances into the environment. Activities reasonably expected to violate

the integrity of the refrigerant circuit include but are not limited to: Attaching or detaching hoses and gauges to and from the appliance; adding or removing refrigerant; adding or removing components; and cutting the refrigerant line. Activities such as painting the appliance, rewiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts are not reasonably expected to violate the integrity of the refrigerant circuit. Activities conducted on refrigerant-containing appliances that have been properly evacuated pursuant to § 82.156 are not reasonably expected to release refrigerants unless the activity includes adding refrigerant to the appliance. Technicians could include but are not limited to installers, contractor employees, in-house service personnel, and owners and/or operators of refrigerant-containing appliances. This proposed definition deviates slightly from the definition of ''technician'' at 40 CFR 82.152 to conform to the AIM Act grant of authority. EPA is also proposing a definition of ''certified technician'' to make it clear that persons certified per 40 CFR 82.161 are considered ''certified technicians'' for the purposes of these regulations. In section VIII. of this preamble, EPA is taking advanced comment on considerations for a future rulemaking on technician training.

2. Which definitions is EPA proposing to adopt that parallel definitions in 40 CFR 82.32?

EPA is proposing to adopt definitions for the following defined terms that are similar to the definitions used in 40 CFR 82.32 with limited changes as are needed to conform with the AIM Act or this proposal. EPA is proposing this approach for these defined terms because they are used in the same or substantially similar manner as in 40 CFR part 82, subpart B—Servicing of Motor Vehicle Air Conditioners under the CAA. Section 609 in Title VI of the CAA is relevant to refrigerant management, as it directs EPA to establish standards and requirements regarding the servicing of MVACs. For example, under CAA section 609 and regulations that implement it, no person repairing or servicing motor vehicles for consideration (*e.g.,* payment or bartering) may perform any service on an MVAC that involves the refrigerant without properly using approved refrigerant recovery or recovery and recycling equipment, and no such person may perform such service for consideration unless such person has been properly trained and certified. Because many within the regulated community are subject to both the AIM Act and CAA section 609, maintaining the same definitions, where consistent with AIM Act requirements, would provide consistency to those that have been using and are familiar with these terms from section 609. EPA welcomes comment on whether any of these terms should be further updated or modified for purposes of this rulemaking under subsection (h) of the AIM Act.

Motor vehicle as used in this subpart means any vehicle which is self-propelled and designed for transporting persons or property on a street or highway, including but not limited to passenger cars, light-duty vehicles, and heavy-duty vehicles. This definition does not include a vehicle where final assembly of the vehicle has not been completed by the original equipment manufacturer.

Motor vehicle air conditioners (MVAC) means mechanical vapor compression refrigerant-containing appliances used to cool the driver's or passenger's compartment of any motor vehicle. This definition is intended to have the same meaning as defined in 40 CFR 82.32.

3. What other definitions is EPA proposing to adopt?

EPA is also proposing to establish definitions for new terms that are applicable only under 40 CFR part 84, subpart C, and do not have a counterpart in the definitions under 40 CFR part 84, subpart A and that we do not anticipate will have a counterpart in any definitions that may be finalized in subpart B. The definitions that EPA is proposing to include in 40 CFR 84.102 for application to 40 CFR part 84, subpart C are as follows:

Certified technician means a technician that has been certified per the provisions at 40 CFR 82.161.

Equipment means any device that contains, uses, detects or is otherwise connected or associated with a regulated substance or substitute for a regulated substance, including any refrigerant-containing appliance, component, or system.

Fire suppression equipment means any device that is connected to or associated with a regulated substance or substitute for a regulated substance, including blends and mixtures, consisting in part or whole of a regulated substance or a substitute for a regulated substance, and that is used for fire suppression purposes. This term includes any such equipment, component, or system. This term does not include mission-critical military end uses and systems used in deployable and expeditionary situations. This term also does not include space vehicles as defined in 40 CFR 84.3.

EPA is proposing to explicitly state that the definition of ''fire suppression equipment'' for purposes of subsection (h) does not include mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles. This proposed exclusion is based on EPA's understanding that there are situations in which the unique design and use of mission-critical military end uses and systems used in deployable and expeditionary situations and space vehicles make it impossible to recover fire suppression agent during the service, repair, disposal, or installation of the equipment.

Fire suppression technician means any person who in the course of servicing, repair, disposal, or installation of fire suppression equipment could be reasonably expected to violate the integrity of the fire suppression equipment and therefore release fire suppressants into the environment.

Installation means the process of setting up equipment for use, which may include steps such as completing the refrigerant circuit, including charging equipment with a regulated substance or substitute for a regulated substance, or connecting cylinders containing a regulated substance or a substitute for a regulated substance to a total flooding fire suppression system, such that the equipment can function and is ready for use for its intended purpose.

This definition of ''installation'' for purposes of subsection (h) is different from how the term is used in the definitions in the proposed Technology Transitions Rule (87 FR 76738, December 15, 2022). Specifically, the definition for ''manufacture'' in that proposed rule covers the installation of certain appliances in certain subsectors (*e.g.,* commercial refrigeration and IPR). In discussing the definition for ''manufacture'' in that proposed rule, EPA described that for these types of appliances, complex installation processes may be required, and the appliance is typically manufactured and field-charged with refrigerant on-site. Further, appliances such as these that are field charged or have the refrigerant circuit completed on-site are considered manufactured at the point when installation of all the components and other parts are completed, and the appliance is fully charged with refrigerant and able to operate. For purposes of the proposed Technology Transitions Rule (87 FR 76738, December 15, 2022), the installation

date of such equipment is relevant to the proposed GWP limit-based restriction and compliance date for the applicable subsector(s).

The types of installations covered under the proposed definition of ''manufacture'' in the proposed Technology Transitions Rule (87 FR 76738, December 15, 2022) would be included in the proposed definition of ''installation'' in this proposal under subsection (h), and other types of installation would also be included in the definition included in this proposal. EPA is proposing a broad definition of ''installation'' under subsection (h) in order to ensure that the Agency's implementation of subsection (h)(1) encompasses the practices, processes or activities that are relevant to the installation of equipment that would be regulated under this proposal.

Leak inspection, as it relates to a refrigerant-containing appliance, means the examination of an appliance to detect and determine the location of refrigerant leaks. Potential methods include, but are not limited to, ultrasonic tests, gas-imaging cameras, bubble tests as appropriate, or the use of a leak detection device operated and maintained according to manufacturer guidelines. Methods that determine whether the appliance is leaking refrigerant but not the location of a leak, such as standing pressure/vacuum decay tests, sight glass checks, viewing receiver levels, pressure checks, and charging charts, must be used in conjunction with methods that can determine the location of a leak.

This definition generally aligns with the corresponding definition at 40 CFR 82.152, except EPA is proposing to add the ''detect and'' language. In EPA's view, including ''detect and'' clarifies that a leak inspection is not just to determine the precise location of a known leak, but also to detect additional leaks that may be contributing to a leak rate exceedance.

Owner or operator means any person who owns, leases, operates, or controls any equipment, or who controls or supervises any practice, process, or activity that is subject to any requirement pursuant to this subpart.

Recover means the process by which a regulated substance, or where applicable, a substitute for a regulated substance, is removed, in any condition, from equipment; and stored in an external container, with or without testing or processing the regulated substance or substitute for a regulated substance.

In the regulations implementing under subsection (h), EPA is proposing to define the term ''recover'' as it is defined in subsection (b)(10) of the AIM Act for HFCs and to extend the regulatory definition to substitutes for HFCs. The term ''recover'' is defined in the AIM Act at subsection (b)(10) as ''the process by which a regulated substance'' is ''removed, in any condition, from equipment'' and ''stored in an external container, with or without testing or processing the regulated substance.'' EPA is proposing to include that the term recover also apply to substitutes for regulated substances in these regulations to support implementation of subsection (h)(1), which authorizes certain regulations involving substitutes for regulated substitutes. Substitutes for regulated substances are used in the same applications and often the same equipment as the regulated substances that they are being used in place of. Thus, recovering the substitute for a regulated substance would also occur, as appropriate, during the servicing, repair, or disposal of equipment and could be addressed by regulations under subsection (h)(1). Thus, including substitutes for regulated substances in the regulatory definition of ''recover'' provides clarity and supports application of these regulations to both regulated substances and their substitutes.

Recycling, when referring to fire suppression or fire suppressants, means the testing and/or reprocessing of regulated substances used in the fire suppression sector to certain purity standards.

Refrigerant, for purposes of this subpart, means any substance, including blends and mixtures, consisting in part or whole of a regulated substance or a substitute for a regulated substance that is used for heat transfer purposes, including those that provide a cooling effect.

Refrigerant-containing appliance means any device that contains and uses a regulated substance or substitute for a regulated substance as a refrigerant including any air conditioner, motor vehicle air conditioner, refrigerator, chiller, or freezer. For a system with multiple circuits, each independent circuit is considered a separate appliance.

As the terms ''appliance'' and ''refrigerant-containing appliance'' are not defined terms under the AIM Act, the regulatory definition will provide clarity as to what types of equipment would be subject to certain proposed requirements. EPA intends this term to be a subset of the broader category of ''equipment'' subject to subsection (h) of the AIM Act. EPA notes that this proposed definition differs from the definition of ''appliance'' under section 608 of the CAA. Sections 601 and 608 of the CAA specified that an appliance ''is used for household or commercial purposes,'' and that phrase also appears in the definition of ''appliance'' in 40 CFR 82.152. The AIM Act has no analogous provision. Accordingly, EPA is not proposing to include that phrase in defining ''refrigerant-containing appliance'' for purposes of implementing subsection (h). In keeping with the application of Title VI of the CAA (*e.g.,* under sections 608 and 612), EPA is defining a ''refrigerant-containing appliance'' to consist of an independent circuit. The independent circuit provides the desired cooling or heating effect, typically consisting of a compressor, condenser, evaporator, and metering device in an enclosed refrigerant loop. EPA notes that a given piece of equipment could contain multiple independent circuits and thus be considered as multiple, separate ''refrigerant-containing appliances.'' For instance, some food retail cases have been made with multiple independent circuits, each one containing the maximum 150-gram charge limit of propane, thus allowing a single case to address a higher refrigeration load. Also, some household refrigerator-freezers have been produced with two independent circuits, one handling the refrigerator and another the freezer.

Refrigerant-containing equipment means equipment as defined in this subpart that contains, uses, or is otherwise connected or associated with a regulated substance or substitute for a regulated substance that is used as a refrigerant. This definition includes refrigerant-containing components, refrigerant-containing appliances, and MVAC-like appliances. This term does not include mission-critical military end uses and systems used in deployable and expeditionary situations. This term also does not include space vehicles as defined in 40 CFR 84.3.

EPA is proposing to explicitly state that the definition of ''refrigerant-containing equipment'' under subsection (h) does not include mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles. This proposed exclusion is based on EPA's understanding that there are situations in which the unique design and use of mission-critical military end uses and systems used in deployable and expeditionary situations and space vehicles make it impossible to recover refrigerant during the service, repair, disposal, or installation of the equipment. Likewise, requiring adherence to the leak repair and other

proposed provisions for refrigerant-containing equipment in this proposal in an active military zone of engagement, including systems used in deployable and expeditionary situations, could lessen the military effectiveness of the equipment. Likewise, requiring leak repair and other provisions in this proposal for such equipment in space vehicles could lessen their effectiveness.

Repackager means an entity who transfers regulated substances, either alone or in a blend, from one container to another container prior to sale or distribution or offer for sale or distribution. An entity that services system cylinders for use in fire suppression equipment and returns the same regulated substances to the same system cylinder it was recovered from after the system cylinder is serviced is not a repackager.

Repair, for purposes of this subpart and as it relates to a particular leak in a refrigerant-containing appliance, means making adjustments or other alterations to that refrigerant-containing appliance that have the effect of stopping leakage of refrigerant from that particular leak.

Reprocess means using procedures, such as filtering, drying, distillation and other chemical procedures to remove impurities from a regulated substance or a substitute for a regulated substance.

Retrofit, as it relates to a refrigerant-containing appliance, means to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components. Retrofits required under this subpart shall be done to a refrigerant with a lower global warming potential. EPA is proposing this definition as similar to the parallel definition in 40 CFR 82.152, with an additional provision requiring that retrofits performed for compliance with this rulemaking must involve switching to a lower GWP refrigerant. EPA is proposing to include this provision as part of this definition for the purposes of this action so that if an owner or operator chooses to retrofit a refrigerant-containing appliance in lieu of repairing a leak, the retrofit must use a refrigerant that is a lower GWP in the original equipment. One implication of including this provision would be that if there are cases in which switching to a lower GWP refrigerant is not an option (*e.g.,* for reasons such as safety considerations or a refrigerant with a lower GWP is not suitable for use in a particular refrigerant-containing appliance), a retrofit would not be available as a compliance option for the particular refrigerant-containing appliance. Additional detail on the requirements of performing a retrofit and developing a retrofit plan can be found in section IV.C.3.f. of this preamble.

Stationary refrigerant-containing equipment means refrigerant-containing equipment, as defined in this subpart, that is not a motor vehicle air conditioner or MVAC-like appliance, as defined in this subpart.

Substitute for a regulated substance means a substance that can be used in equipment in the same or similar applications as a regulated substance, to serve the same or a similar purpose, including but not limited to a substance used as a refrigerant in a refrigerant-containing appliance or as a fire suppressant in fire suppression equipment, provided that the substance is not a regulated substance or an ozone-depleting substance.

EPA is proposing for the purposes of this action to define a substitute for a regulated substance to make clear that substitutes in this rulemaking would not include regulated substances or ozone-depleting substances. Examples of a substitute for a regulated substance include but are not limited to HFOs, hydrocarbons (*e.g.,* propane, isobutane), ammonia (NH_4), and CO_2. A substitute for a regulated substance may be used neat or in a blend. Subsection (h) includes authority for EPA to develop regulations involving regulated substances and substitutes for regulated substances. Specifically, subsection (h)(1) expressly provides that EPA is to promulgate certain regulations involving a regulated substance, a substitute for a regulated substance, the reclaiming of a regulated substance as a refrigerant, or the reclaiming of a substitute for a regulated substance as a refrigerant. EPA acknowledges that this definition of ''substitute for a regulated substance'' differs from the definition of the similar term, ''substitute'' [42] in the proposed Technology Transitions Rule (87 FR 76738, December 15, 2022). EPA is proposing this definition for purposes of implementing subsection (h), because specifying that substitutes for a regulated substance are only those substances that do not contain HFCs will draw a distinction that is helpful for certain provisions in this proposal, as EPA is proposing to control certain practices, processes, or activities as they relate to regulated substances differently from compared to how they relate to substitutes for regulated substances. As EPA has noted in the Executive Summary at section I.A., the terms ''HFC'' and ''regulated substance'' are used interchangeably in this preamble. Similarly, throughout this preamble, EPA notes that the term ''substitute for an HFC'' may be used interchangeably with ''substitute for a regulated substance'' in this preamble.

Virgin regulated substance means any regulated substance that has not had any bona fide use in equipment except for those regulated substances contained in the heel or the residue of a container that has bona fide use in the servicing, repair, or installation of equipment.

EPA is proposing to add this definition of ''virgin regulated substance'' to make it clear that introduction of a regulated substance to equipment, such as a refrigerant-containing appliance or fire suppression equipment, solely to convert the regulated substance to ''used'' regulated substance in order to circumvent the intended requirements of this proposal is not permissible. This scenario, where regulated substance is charged to equipment, such as a refrigerant-containing appliance or fire suppression equipment, and recovered without any bona fide use, was brought to EPA's attention by stakeholders including during public stakeholder meetings as the agency developed this proposal.[43] A regulated substance that has had no bona fide use in equipment would be considered a virgin regulated substance unless it was from the heel or residue of a container that did have a bona fide use in the servicing, repair, or installation of equipment.

B. Which sectors and subsectors is EPA considering addressing under subsection (h)?

Subsection (h) of the AIM Act provides EPA authority to promulgate regulations to control, where appropriate, any practice, process, or activity related to the servicing, repair, disposal, or installation of equipment that involves HFCs or their substitutes, or the reclaiming of HFCs or their substitutes used as refrigerants. EPA

[42] The proposed definition for *substitute* in the proposed Technology Transitions rule is: ''any substance, product, or alternative manufacturing process, whether existing or new, that is used, or intended for use, in a sector or subsector with a lower global warming potential than the regulated substance, whether neat or used in a blend, to which a use restriction would apply.'' (See 87 FR 76738, 76754, December 15, 2022). EPA further notes that it has not made final decisions for the Technology Transitions rule.

[43] EPA held stakeholder meetings for public input on November 9, 2022 and March 16, 2023 as well as solicited feedback through a webinar for the EPA GreenChill Partnership program on April 12, 2023.

interprets this provision to include authority to regulate, as appropriate, practices, processes, or activities related to any sector, subsector, or application where a regulated substance or a substitute for a regulated substance is used in equipment. Regulated substances and their substitutes are typically used in the RACHP sector as a refrigerant in a vapor compression cycle to cool and/or dehumidify a substance or space, like a refrigerator cabinet, room, office building, or warehouse. Regulated substances and/or their substitutes may also be used in other sectors, subsectors, or applications, such as aerosols, fire suppression, solvent cleaning, foam blowing, and others. However, as noted in section II.B. of this proposal, subsection (h)(4) expressly provides that any rulemaking under subsection (h) shall not apply to a regulated substance or a substitute for a regulated substance that is contained in a foam. Thus, EPA is not proposing any requirements for regulated substances or their substitutes when they are contained in foams in this proposal. Accordingly, EPA interprets its authority under subsection (h) to include promulgating regulations that control the types of practices, processes, or activities identified in subsection (h)(1) in any of those sectors, subsectors, or applications, with the limitation that we do not interpret our regulatory authority under subsection (h) to extend to HFCs or substitutes for HFCs when they are contained in foams.

EPA is proposing requirements for equipment in certain sectors or subsectors as described in sections IV.C.–F. of this preamble. While EPA interprets subsection (h) to provide authority that could be applied to practices, processes, or activities related to equipment across a broad range of sectors, subsectors, or applications that involve regulated substances and/or their substitutes, at this time EPA is focusing on certain sectors and subsectors in the requirements proposed in the rulemaking. In future rulemakings, EPA may consider establishing requirements for equipment in other sectors, subsectors, or applications that involve regulated substances and/or their substitutes. The relevant sections of this preamble describe the requirements that EPA is proposing for equipment in certain sectors and subsectors and how EPA understands these sectors and subsectors as relevant for these proposed requirements.

Where EPA is proposing requirements for certain sectors or subsectors, we intend to be consistent with how those sectors or subsectors are understood under other provisions of the AIM Act and/or CAA Title VI that address the same sector or subsector, such as subsection (i) of the AIM Act, through the Technology Transitions program. EPA issued a proposed Technology Transition rulemaking on December 15, 2022 (87 FR 76738) which provides additional detail on many of the same sectors and subsectors for which we are proposing certain requirements under subsection (h). Although EPA has not yet made final decisions regarding those sectors or subsectors under subsection (i) of the AIM Act, we also anticipate considering how those sectors or subsectors are addressed in the final Technology Transitions rulemaking in developing this rulemaking under subsection (h) of the AIM Act.

EPA is proposing certain provisions, as described later in this preamble, for certain equipment in applicable subsectors within the RACHP sector in this action. Such subsectors within the RACHP sector include: residential and light commercial air conditioning and heat pumps; cold storage warehouses; IPR; stand-alone retail food refrigeration; supermarket systems; refrigerated transport; and automatic commercial ice makers. EPA is also proposing certain provisions for equipment in the fire suppression sector, as described later in this preamble. Not all provisions proposed in this rulemaking would apply to each of the sectors and subsectors identified here. For example, EPA is proposing certain requirements for the use of reclaimed HFCs in residential and light commercial AC and heat pumps. However, EPA is proposing to exempt residential and light commercial AC and heat pump equipment in the universe of refrigerant-containing appliances subject to proposed leak repair requirements. Additional detail can be found in section IV.C.2. of this preamble.

EPA is requesting comment on all aspects of this proposed rule. Where EPA is proposing requirements for equipment in certain sectors and subsectors, EPA is providing additional detail noting specific areas for which we are seeking comment.

C. How is EPA proposing to address leak repair?

1. Background

As noted above, subsection (h) of the AIM Act includes provisions focused on the management of regulated substances. Specifically, subsection (h)(1) directs EPA, for ''purposes of maximizing reclaiming and minimizing the release of a regulated substance from equipment and ensuring the safety of technicians and consumers,'' to ''promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment (including requiring, where appropriate, that any such servicing, repair, disposal, or installation be performed by a trained technician meeting minimum standards, as determined by the Administrator) that involves'': ''a regulated substance''; ''a substitute for a regulated substance''; ''the reclaiming of a regulated substance used as a refrigerant''; or ''the reclaiming of a substitute for a regulated substance used as a refrigerant.''

Among other things, EPA interprets its regulatory authority under subsection (h)(1) to include authority to establish requirements related to the detection, prevention, and repair of leaks for equipment containing HFCs or substitutes for HFCs (whether the equipment uses the HFC or substitute for an HFC neat or in a blend with other substances). EPA understands the statutory phrase ''regulations to control . . . any practice, process, or activity'' as including authority for rules governing both the manner in which a practice, process, or activity occurs (*e.g.,* standards that must be met, timing of the process or activity, etc.), as well as rules requiring that a practice, process, or activity be undertaken. Regulations establishing requirements for leak prevention, detection, and repair would control practices, processes, and activities regarding the servicing, repair, disposal, or installation of equipment. For example, detecting and fixing leaks in equipment would be considered an activity regarding the servicing or repair of equipment. Similarly, leak prevention and/or inspection and repair practices, processes, or activities would be conducted regarding the servicing and/or repair of equipment.

The requirements proposed in this rulemaking also relate to the statutory purposes identified in subsection (h)(1). Requirements related to the detection, inspection, repair, and prevention of leaks for equipment containing HFCs (whether used neat or in a blend) or their substitutes would serve the statutory purpose of minimizing the release of regulated substances from equipment. For example, leak detection, inspection, and repair requirements help minimize such releases because the sooner a leak is found and repaired, the less HFC will be released. Further, leak prevention requirements would minimize HFC releases by avoiding potential leaks in the first place. Additionally, regulations establishing

requirements for leak prevention, detection, and repair would also further the statutory purpose of maximizing the reclamation of regulated substances by reducing the amount of HFC released from equipment and thus increasing the amount of HFC that is available to be recovered and reclaimed. Any regulated substance used in equipment that is released through leaks and escapes to the atmosphere reduces the amount of HFC remaining in the equipment that could otherwise be recovered and reclaimed for further use.

Further, as the phasedown of the production and consumption of HFCs as required by the AIM Act progresses, reclaimed HFCs will play a key role in the amount of available HFCs for equipment that will continue to use HFCs (*e.g.,* for servicing). Reclaimed HFCs will also be important in avoiding potential economic disruption that could be associated with the scarcity of virgin HFCs as well as avoid stranding existing equipment that will need to be serviced using HFCs. Generally, overall refrigerant management in appliances helps to maintain the health of the appliances. This can be crucial for refrigerant-containing appliances in the RACHP subsectors that are relevant to handling food products, such as supermarket systems, refrigerated transport, and other food retail subsectors where the intended function is to ensure food products are maintained at appropriate temperatures to avoid spoilage and food waste. In 2021, 344,000 tons of food were lost in the United States due to equipment issues in the retail and food service subsectors.[44] Successful repair of leaks and avoiding leaks are a few ways to help ensure that these appliances are operating efficiently and as intended and can help to avoid unnecessary food waste.

In considering requirements related to leak prevention, detection, and repair under subsection (h) of the AIM Act, EPA further notes that subsection (h)(3) expressly provides that EPA may coordinate regulations promulgated to carry out subsection (h) with any other regulations promulgated by EPA that involve the same or a similar practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment, or reclaiming. Accordingly, the Agency considered various potential approaches to coordinating the proposed regulations under subsection (h) related to leak prevention, detection, and repair with regulations previously promulgated under CAA section 608, given they relate to the same or similar practices, processes, or activities for refrigerant-containing appliances containing ODS. In particular, during the development of this NPRM, EPA considered the requirements at 40 CFR 82.157.

As noted in the background section of this preamble at section III.C.1., all provisions in 40 CFR part 82, subpart F except leak repair currently apply to appliances containing ODS substitutes including regulated HFCs used neatly or in blends. EPA is not proposing any requirements duplicative of those in this action. However, EPA is proposing to establish leak repair requirements for refrigerant-containing appliances using HFCs and/or substitutes for HFCs.

As described in the definitions section of this proposal at section IV.A.3., EPA is proposing to define ''equipment'' as including appliances. In the context of subsection (h), EPA considers that appliances would be a subset within the broader category of equipment. EPA has also proposed to define ''refrigerant-containing appliance'' in section IV.A.3. In this action, the Agency generally refers to the proposed leak repair requirements as applying to refrigerant-containing appliances. In the context of the proposed leak repair requirements, appliances are considered types of equipment that are used in subsectors within the RACHP sector. EPA is proposing leak repair provisions for certain refrigerant-containing appliances with a refrigerant that contains HFCs or certain substitutes for HFCs (whether the equipment uses the HFC or certain substitutes for an HFC neat or in a blend with other substances) under subsection (h) of the AIM Act. If finalized, these regulations would be codified at 40 CFR part 84.106.

2. Scope of the Proposed Leak Repair Requirements

EPA is proposing leak repair requirements for certain refrigerant-containing appliances containing HFC (whether used neat or in a blend) or certain HFC substitute refrigerants under subsection (h) of the AIM Act. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding servicing or repair of appliances, which are a type of equipment, and would involve a regulated substance or a substitute for a regulated substance. The requirements proposed are similar to leak repair provisions for appliances containing an ODS refrigerant found at 40 CFR 82.157,[45] but are not identical. In particular, EPA is proposing to apply the leak repair requirements under subsection (h) of the AIM Act to appliances containing HFCs or certain substitutes for HFCs with lower charge sizes. Where EPA is proposing to require the same or similar practice, process or activity for applicable appliances containing HFC or substitutes for HFCs as is required under 40 CFR 82.157 for appliances containing an ODS refrigerant, EPA is proposing to adopt regulatory text under 40 CFR part 84, where appropriate, that is consistent with the parallel provision in 40 CFR 82.157. Where the proposed requirements are different, the regulatory text will differ.

a. Appliances containing which refrigerants would be subject to the proposed leak repair requirements?

EPA is proposing to include HFCs (including blends that contain HFCs) and certain substitutes for HFCs under the provisions related to leak repair under subsection (h) of the AIM Act. As noted previously, HFCs are potent GHGs with GWPs that can be hundreds to thousands of times more potent than CO_2. As noted in the background section of this preamble (section III.A), global HFC use and emissions have been increasing since the ODS phaseout and their increasing use in RACHP equipment.[46] Provisions related to leak repair for equipment that use HFCs and their substitutes are critical to mitigating emissions of HFCs and meeting the purpose stated in subsection (h)(1) of the AIM Act to minimize releases of regulated substances from equipment. As mentioned, the AIM Act includes a list of 18 HFCs as regulated substances and provides authority for the Administrator to add additional HFCs if certain criteria are met, including that the GWP of the substance is above 53.[47] Certain substitutes for HFCs have GWPs that are below that of the lowest GWP of a substance that EPA could list as a regulated substance under subsection (c)(3)(A)(i)(II) of the AIM Act (*i.e.,* a GWP of greater than 53). EPA is proposing to apply the leak repair requirements to refrigerant-containing appliances containing an HFC

[44] ReFED, Insights Engine Food Waste Monitor, May 2023, available at: *https://insights-engine.refed.org/food-waste-monitor?view=overview&year=2021.*

[45] In this proposed rulemaking, EPA is not reopening the leak repair requirements at 40 CFR 82.157 or proposing any changes to them.

[46] WMO, 2022.

[47] Subsection (c)(3)(A) provides the criteria by which the Administrator may designate a substance not included in the list of regulated substances in subsection (c)(1); these criteria include that the substance must be a chemical substance that is a saturated hydrofluorocarbon and have an exchange value (*i.e.,* GWP) greater than 53.

refrigerant or a substitute for HFC refrigerants that have a GWP above 53 (whether the HFC or substitute for an HFC is used neat or in a blend). EPA is proposing this cutoff for the leak repair provisions; however, other provisions in this proposal would apply to any substitute for an HFC without any GWP threshold, unless otherwise specified.

In subsection (h) of the AIM Act, Congress directed EPA to control, *where appropriate,* any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment involving HFCs or their substitutes. EPA is proposing that for the leak repair provisions under subsection (h), it is appropriate at this time to only address substitutes for HFCs (whether used neat or in a blend) with GWPs that are greater than the cutoff Congress provided for listing new regulated substances (*i.e.,* a GWP of 53). The agency notes that currently the vast majority of HFC refrigerants and refrigerant blends containing HFCs in equipment have much higher GWPs, often 20 to 50, or even more than 75 times as high as this cutoff. EPA acknowledges that over time the refrigerant market is likely to shift, and that this proposal is based on the current and near-term anticipated market for equipment that contains HFCs and substitutes for HFCs. Thus, we view it as appropriate to focus the proposed leak repair requirements on HFCs and substitutes for HFCs with GWPs above 53 in this rulemaking, whether the HFC or substitute is used neat or in a refrigerant blend. We further note that EPA may in a future rulemaking consider establishing leak repair requirements for substitutes for HFCs and blends containing substitutes for HFCs with a GWP at or below 53. For example, if EPA becomes aware of concerns related to this limitation as the refrigerant market shifts to lower GWP substitutes for HFCs, EPA could consider revisiting this requirement.

To determine whether an appliance containing a substitute for a regulated substance is required to comply with the proposed leak repair provisions, EPA is proposing to adopt the similar process for determining the GWP of regulated substances and/or their substitutes as described in the proposed Technology Transitions Rule (87 FR 76738, 76750, December 15, 2022). The GWP of a regulated substance would use the GWP as related to the exchange value listed in subsection (c) of the AIM Act and codified as appendix A to 40 CFR part 84.[48] For the GWP of substitutes for regulated substances, EPA is proposing to use IPCC's Fourth Assessment Report (AR4) 100-year GWPs wherever possible given they are numerically the same as the exchange values in the AIM Act and because EPA considers such an approach to be less complicated. For hydrocarbons listed in Table 2–15 of AR4, EPA is proposing to use the net GWP value. For substances for which no GWP is provided in AR4, EPA is proposing to use the 100-year GWP listed in World Meteorological Organization (WMO) 2022.[49] For any substance not listed in either of these sources, EPA is proposing to use the GWP of the substance in Table A–1 to 40 CFR part 98, as it exists on a specified date, such as the date any final rule based on this proposal is published in the **Federal Register**, if such substance is specifically listed in that table. EPA is aware of two potential substitutes for regulated substances that might be addressed by the proposed requirements that are not listed in these three sources, trans-dichloroethylene (HCO-1130(E)) and HCFO-1224yd(Z) and is proposing to set these GWPs to be five[50] and one,[51] respectively, for the purposes of this proposal. For any other substance not listed in the above three source documents, EPA is proposing that the default GWPs as shown in Table A–1 to 40 CFR part 98, as it exists on a specified date, such as the date any final rule based on this proposal is published in the **Federal Register**, shall be used. In the event that the hierarchy outlined in this section does not provide a GWP (*i.e.,* the substance in question is not listed in the three documents, is not one of the two for which EPA is proposing GWPs, is not listed in Table A–1 to 40 CFR part 98 and does not fit within any of the default GWPs provided in Table A–1 to 40 CFR part 98), EPA is proposing to use a GWP of zero. In any case where a GWP value is preceded with a less than (<), very less than (<<), greater than (>), approximately (~), or similar symbol in the source document, which is used to determine the GWP, EPA is proposing that the value shown shall be used.

Applying the proposed provisions related to leak repair under subsection (h) to HFC substitutes with a GWP greater than 53, but not those with a GWP at or below 53, would result in certain lower GWP refrigerants (*e.g.,* single component HFO refrigerants) that are covered by the venting prohibition at 40 CFR 82.154(a)(1) to be excluded from coverage under the proposed subsection (h) leak repair provisions, as they have a GWP lower than 53. The proposed leak repair requirements would still apply where any substitute for an HFC is a component in a refrigerant blend that contains an HFC or another substitute for an HFC with a GWP above 53. This would be true even if one or more of the components of the refrigerant blend is a substitute for an HFC that is exempted from the venting prohibition under 40 CFR 82.154(a)(1). In describing the practical effects of our proposed approach, we are not reopening, taking comment on, or proposing to modify any regulatory provisions in 40 CFR part 82 in this NPRM.

In the case that a refrigerant-containing appliance uses a refrigerant blend that contains an ODS and an HFC or a substitute for an HFC with a GWP above 53, EPA is proposing that the owner or operator of such appliance be required to simultaneously meet the leak repair provisions promulgated under CAA section 608 at 40 CFR 82.157 and the proposed provisions in this action, to the extent that they are applicable. EPA notes that many of the provisions in this proposed action are similar to those in 40 CFR 82.157, which should help alleviate any concerns about duplicative requirements. However, the provisions proposed in this NPRM (as described in the following section) would apply to refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53. The requirements at 40 CFR 82.157 apply to appliances containing an ODS with a charge size at or above 50 pounds. If such appliances use a refrigerant that also contains an HFC or an HFC substitute that has a GWP above 53, they would be required to meet the leak repair requirements proposed in this NPRM, to ensure that the requirements applicable to the HFCs and HFC substitutes are also met. An appliance with a charge size of 15 pounds or greater containing a refrigerant blend that was made up of ODS and an HFC or a substitute for an HFC with a GWP above 53 would also be required to meet the proposed provisions in this action, as a way of ensuring that the requirements that apply to the HFCs or certain substitutes for HFCs contained in the equipment

[48] EPA noted in section III.A. of this preamble that the exchange values for the regulated HFCs listed in subsection (c) of the AIM Act are numerically identical to the 100-year GWPs of each substance, as given in the Errata to Table 2.14 of the IPCC's Fourth Assessment Report (AR4) and Annexes A, C, and F of the Montreal Protocol. Available at: *https://www.ipcc.ch/site/assets/uploads/2018/05/ar4-wg1-errata.pdf.*

[49] WMO, 2022.

[50] 81 FR 32244 (May 23, 2016).

[51] 84 FR 64766 (November 25, 2019).

are met. However, because these appliances would not meet the charge size threshold under 40 CFR 82.157, those requirements would not apply even though they contain ODS refrigerants.

EPA intends for the leak repair requirements in this proposal to be sufficiently consistent with the requirements at 40 CFR 82.157 such that both sets of requirements could be met for refrigerant-containing appliances that use a refrigerant blend containing an ODS and an HFC or a substitute for an HFC with a GWP above 53 and that have full charge of 50 or more pounds of refrigerant. EPA requests comment on whether there is an impediment to a refrigerant containing-appliance simultaneously complying with both sets of requirements.

Leak repair provisions for appliances containing HFCs and certain substitutes for HFCs as refrigerants as proposed in this document should minimize emissions. EPA describes emission reductions in the draft TSD titled *Analysis of the Economic Impact and Benefits of the Proposed Rule* and in in section VI. of this proposal.

EPA is requesting comment on all aspects of this proposal. In particular, EPA is seeking comment on the use of a GWP cutoff to apply the proposed leak repair requirements to equipment containing an HFC or a substitute for an HFC as a refrigerant, used neat or in blends. EPA also seeks comment on using a GWP above 53 as the cutoff, including, for example, comments on whether EPA should consider a lower GWP cutoff.

b. Appliances with what charge size would be subject to the proposed leak repair requirements?

EPA is proposing to apply the leak repair requirements under subsection (h) of the AIM Act to refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53, with specific exemptions. This is a lower threshold than the threshold for the leak repair requirements established under CAA section 608, as the leak repair provisions at 40 CFR 82.157 apply to appliances containing 50 or more pounds of ODS refrigerant, a threshold that was established in 1993. EPA is aware of technological achievements that, in many cases, have resulted in smaller charge sizes for cooling loads. For example, microchannel heat exchangers are one such technology used to reduce refrigerant charge size in equipment. Equipment using different refrigerants may also have a lower charge size; for example, in air conditioning equipment, the refrigerant charge size for HFC–32 is approximately 10–20 percent less than that of R–410A.[52] As another example, EPA also understands that in certain cases, remodels or expansions of supermarket systems can increase capacity while not increasing the refrigerant charge size (*i.e.,* effectively using a lower refrigerant charge for a greater cooling capacity). Such a scenario could be achieved by remodeling with display cases that operate at a higher evaporator temperature to maintain product temperatures without changing the intended purpose of the refrigeration system.[53]

EPA is proposing a lower threshold because applying the requirements to more equipment is expected to reduce HFC releases from equipment and because avoided releases of HFCs from leaks would increase the amount of HFCs that would be available for recovery and reclamation. The AIM Act provides a schedule for a phasedown of HFCs, as opposed to the phaseout directed for ODS under the CAA. Therefore, there may be the continued introduction of HFC-containing equipment indefinitely which is a notable difference from the CAA. As described more fully in section II.B. of this proposal, subsection (h)(1) of the AIM Act tasks the Agency with promulgating certain regulations, where appropriate, for certain purposes, including minimizing the release of regulated substances from equipment and maximizing the reclamation of regulated substances. EPA interprets the phrase ''where appropriate'' in subsection (h)(1) to provide it discretion to reasonably determine how the regulations under subsection (h)(1) will apply, including by making determinations about the charge size threshold of equipment that would be subject to the leak repair requirements. Consistent with its statutory authority, EPA is proposing to use a lower threshold than the 50-pound threshold for ODS-containing appliances under 40 CFR 82.157 for the leak repair requirements to further serve these purposes.

By proposing that the applicable charge size for appliances with a refrigerant that contains an HFC or a substitute for an HFC with a GWP greater than 53 to be 15 pounds or more of refrigerant, with certain exemptions, the universe of affected appliances covered by the leak repair requirements under subsection (h) would be expanded as compared to the universe of appliances containing ODS refrigerants and subject to the leak repair requirements provisions at 40 CFR 82.157. For example, an applicable charge size of 15 pounds or more of a refrigerant that contains an HFC or substitute refrigerant with a GWP above 53 is expected to cover certain appliances in the following subsectors which are typically below the 50-pound threshold under 40 CFR 82.157 and thus not subject to those provisions:

- Train air conditioning;
- Passenger buses (*e.g.,* school, coach, transit, and trolley buses);[54]
- Refrigerated transport—rail;
- Large retail food remote condensing units (*e.g.,* cold rooms in supermarkets); and
- Large commercial unitary air conditioning (*e.g.,* a system for a mid-sized office building).

EPA is proposing a 15-pound or more refrigerant charge size for appliances subject to the subsection (h) leak repair requirements based in part on consideration of an analysis of equipment in applications where HFCs or their substitutes are currently being used as a refrigerant and where they are expected to be used in the coming years. EPA conducted an analysis using the Vintaging Model to estimate stocks of refrigerants used in equipment of varying charge sizes. The Vintaging Model tracks the transition from ODS to substitutes including HFCs by modeling the total pieces of equipment and average charge sizes—which could vary over time based on vintage and the ODS or substitute used—from five sectors to over 60 subsectors. Doing so allows us to bin the pieces of equipment and total refrigerant in equipment by charge size. A current snapshot of the model's estimates of the installed stock of refrigerants that are HFCs and their substitutes (excluding ODS refrigerants) in 2025 shows that approximately 39 percent of refrigerants (on a weighted CO_2e basis) are used in appliances with a charge size above 50 pounds. An additional 22 percent of installed stock are within appliances containing between 15 and 50 pounds of refrigerant. In evaluating potential sources where leak repair could be efficacious at reducing releases of refrigerant from equipment and changes

[52] Refrigeration, Air Conditioning, and Heat Pumps Technical Options Committee 2018 Assessment Report, Technical and Economic Assessment Panel, UNEP, February 2019. Available at: *https://ozone.unep.org/sites/default/files/2019-04/RTOC-assessment-report-2018_0.pdf.*

[53] See 80 FR 42903, July 20, 2015.

[54] ''Bus'' is defined at 40 CFR 1037.801 and means ''a heavy-duty vehicle designed to carry more than 15 passengers. Buses may include coach buses, school buses, and urban transit buses.''

in the RACHP market and aftermarket over the past few decades, EPA finds it appropriate to propose a threshold of 15 pounds as the applicable charge size of appliances that would need to comply with leak repair requirements. As a general matter, EPA is proposing 15 pounds as the appropriate charge size threshold because at less than 15 pounds these appliances are significantly more likely to be hermetically sealed and thus less prone to leak, and because appliances with less than 15 pounds are also more likely to be replaced rather than repaired.

EPA assessed other refrigerant charge sizes for appliances to cover in the proposed leak provisions. EPA is considering higher alternative thresholds for charge sizes such as 30 pounds and 50 pounds, as well as lower alternative thresholds, such as 5 pounds. For information on the estimated costs and emissions reductions of the various charge size thresholds, please refer to Appendix F of the draft TSD titled *Analysis of the Economic Impact and Benefits of the Proposed Rule* in the docket for this action. As a general matter, EPA considered the statutory purposes in subsection (h)(1) to maximize the reclaiming and minimize the releases of regulated substances from equipment when setting the threshold for appliances covered for the leak repair requirements. These purposes guided EPA's considerations in exploring different charge sizes; however, subsection (h)(1) states for EPA to consider promulgating regulations ''as appropriate'' to meet these purposes. EPA notes that refrigerant-containing appliances with small charge sizes (below 15 pounds) may be hermetically sealed and less prone to leaks. Further, in many cases, these smaller appliances (*e.g.,* residential appliances like window air conditioning units) are likely to be disposed of and replaced rather than repaired when they are found to be malfunctioning. On the other hand, EPA described earlier in this section the rationale for proposing the lower charge size threshold of 15 pounds as compared to a higher charge size (*e.g.,* 30 or 50 pounds). For example, EPA notes that with technological advances in some refrigerant-containing appliances, similar cooling capacity can be achieved with smaller relative charge sizes. We are proposing a charge size threshold of 15 pounds of refrigerant for covered appliances in this action.

EPA is proposing to exempt from the leak repair requirements under subsection (h) any refrigerant-containing appliance, including those with a charge-size at or above 15 pounds, used for the residential and light commercial air conditioning and heat pumps subsector.[55] The vast majority of appliances in the residential and light air conditioning subsector typically have a charge size of less than 15 pounds; however, EPA is proposing exemptions in the case that an appliance is used within this subsector with a charge size of 15 pounds or more. These appliances are used in residences (but this subsector does not include larger centrally-cooled apartment/condominium buildings—where a chiller is likely used), and small retail and office buildings. Since the majority of appliances in this subsector have a refrigerant charge below the proposed 15-pound cutoff for leak repair requirements, enforcement of those that are above a charge size of 15 pounds may be challenging or burdensome. It may not be immediately obvious if a particular refrigerant-containing appliance has a charge size of 15 pounds or greater without examining it more closely. Further, the universe of affected appliances could grow unevenly if appliances in this subsector were included, which could cause compliance by owners and operators or servicing technicians to become cumbersome. EPA's proposal to exempt appliances in this subsector from the leak repair requirements would be administratively more efficient and less burdensome for those that would be required to comply.

The Agency is proposing to require leak repair provisions for new and existing passenger buses,[56] including school, coach, transit, and trolley buses with charge-sizes at or above 15 pounds. The HD category [57] incorporates all motor vehicles with a gross vehicle weight rating of 8,500 pounds or greater. Air conditioning systems used to cool passenger compartments in these buses mainly use HFC–134a or R–407C,[58] and are typically manufactured as a separate unit that is pre-charged with refrigerant and installed onto the vehicle in a separate enclosure (*e.g.,* roof mounted). The refrigerant charge for these systems is also much larger than those for other MVAC systems, typically ranging from 15 to 30 pounds. On the other hand, MVAC systems used to cool passenger compartments in light-duty, medium-duty, HD on-road and nonroad (off-road) vehicles are typically charged during vehicle manufacture and the main components are connected by flexible refrigerant lines. MVAC systems in these vehicles typically have charge sizes ranging from one to eight pounds depending on the manufacturer and cab size.[59] [60] EPA requests comments on the proposed extension of the leak repair provisions to passenger buses. The Agency is particularly interested in information, such as any technical challenges, maintenance concerns, or other issues EPA should consider regarding the repair of buses.

EPA is proposing to stagger the proposed compliance dates. Appliances containing 50 pounds or more of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 would be required to comply with the provisions on the effective date for the final rule. Because these proposed requirements are similar to those that have been in place for ODS-containing appliances at or above a full charge size of 50 pounds for some time, EPA is proposing to conclude that this is sufficient time for regulated entities to come into compliance. Further, prior to the rescission in 2020 (85 FR 14150, March 11, 2020), the final rulemaking under CAA section 608 in 2016 (81 FR 82272, November 18, 2016) applied leak repair provisions for HFC-containing appliances with a charge size of 50 pounds or greater. The 2016 CAA

[55] The residential and light commercial air conditioning subsector includes equipment for cooling air in individual rooms, single-family homes, and small commercial buildings, including both self-contained and split systems. Self-contained systems include some rooftop AC units (*e.g.,* those ducted to supply conditioned air to multiple spaces) and many types of room ACs, including packaged terminal air conditioners (PTACs), some rooftop AC units, window AC units, portable room AC units, and wall-mounted self-contained ACs, designed for use in a single room. Split systems include ducted and non-ducted mini-splits (which might also be designed for use in a single room), multi-splits and variable refrigerant flow (VRF) systems, and ducted unitary splits. For additional information on the types of equipment, see EPA's website at *https://www.epa.gov/snap/substitutes-residential-and-light-commercial-air-conditioning-and-heat-pumps.* EPA is not proposing to codify a regulatory definition for residential and light commercial air conditioning and heat pumps subsector consistent with the foregoing description, but EPA requests comment on whether such a regulatory definition would be beneficial in resolving any perceived ambiguities.

[56] ''Bus'' is defined at 40 CFR 1037.801 and means ''a heavy-duty vehicle designed to carry more than 15 passengers. Buses may include coach buses, school buses, and urban transit buses.''

[57] Defined at 40 CFR 86.1803–01.

[58] Chemours, Freon ™ Refrigerant for Bus and Rail Air Conditioning; available at: *https://www.freon.com/en/industries/stationary-ac-heat-pumps/public-transport-ac.*

[59] ICF, 2016. Technical Support Document for Acceptability Listing of HFO–1234yf for Motor Vehicle Air Conditioning in Limited Heavy-Duty Applications. Available at: *https://www.regulations.gov/document/EPA-HQ-OAR-2015-0663-0007.*

[60] EPA, 2021. Basic Information about the Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines. Available at *https://www.epa.gov/emission-standards-reference-guide/basic-information-about-emission-standards-reference-guide-road.*

section 608 Rule became effective on January 1, 2017, and the relevant leak repair requirements for HFCs and other ODS substitutes (now rescinded) applied as of January 1, 2019 (81 FR 82272, 82356, November 18, 2016). The 2020 CAA section 608 Rule took effect on April 10, 2020 (85 FR 14150, March 11, 2020). Thus, for over three years industry was aware of these requirements and affected entities should have been complying for more than one year before the requirements in the 2016 CAA section 608 Rule were rescinded. While entities that were no longer subject to the leak repair requirements after rescission may have chosen to no longer comply with those requirements after the rescission took effect, those entities that were subject to the regulatory requirements per the 2016 CAA section 608 Rule prior to rescission would, at a minimum, be familiar with these requirements.

For appliances with a full charge that is less than 50 pounds of refrigerant, the Agency did not previously require leak repair and thus we are proposing additional time. EPA is proposing one year after the publication date of the final rule for appliances with a charge size between 15 to 50 pounds of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 to allow the affected regulated community time to familiarize themselves with the requirements and make preparations to comply with them. For example, it is expected that owners and operators of affected appliances with between 15 and 50 pounds of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 may need time to learn about the updated requirements; determine full charges of their appliances; and update systems, standard operating procedures, and training materials to best implement the requirements. Appliances with a full charge of between 15 and 50 pounds of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 that are not exempted would be expected to comply as of one year after the date of publication for the final rule in the **Federal Register**. EPA understands that some appliance owners or operators with equipment with a charge size between 15 and 50 pounds of a refrigerant containing an HFC or a substitute for an HFC may have already been repairing leaks. Refrigerant-containing appliance owners or operators may choose to repair leaks when not required, for example as a way to avoid costs associated with continually adding refrigerant to systems or to avoid any disruption in normal operations. However, given there was no leak repair requirement for this equipment, EPA is unaware whether this is true in all or even the majority of cases. Further, where unrequired leak repair may have been occurring, it is not clear whether the repairs were sufficient to ensure equipment was leaking below the applicable leak rates (as established under 40 CFR 82.157) or whether the repairs were verified and records of the repair event were kept. Accordingly, these owners and operators may also need time to understand the proposed requirements and develop practices and processes for compliance.

EPA is seeking comment on all aspects of this proposal. In particular, the Agency is seeking comment on the proposed charge size cutoff of 15 pounds of refrigerant for equipment that contain HFCs or certain substitutes for HFCs. As noted previously, EPA is also considering using different charge sizes as a threshold for the proposed leak repair requirements for applicable refrigerant-containing appliances, including those that are lower (*e.g.,* 5 pounds) or higher (*e.g.,* 30 pounds). While EPA is proposing 15 pounds as the charge size cutoff for the leak repair provisions, EPA continues to consider the option of using a different charge size cutoff, such as 5 pounds, 30 pounds, or 50 pounds, and seeks comment on these considerations. Further, EPA also seeks comment on its proposal to exempt refrigerant-containing appliances in the residential and light commercial air conditioning and heat pumps subsector from the leak repair requirements. Specifically, EPA is seeking whether the scope of this exemption is appropriate and if EPA should consider exempting refrigerant-containing appliances in other subsectors from the proposed leak repair requirements. While EPA is proposing that refrigerant-containing appliances with a full charge between 15 and 50 pounds subject to the leak repair requirements under 40 CFR part 84 would have a compliance date of one year after the date of publication for the final rule in the **Federal Register**, the Agency is considering alternative compliance dates including January 1, 2025, or 18 months from the date of publication of the final rule. EPA is seeking comment on the proposed compliance dates for the proposed leak repair requirements, and in particular, allowing additional time for appliances with a refrigerant charge size of between 15 and 50 pounds. In particular, EPA seeks information about activities (besides rule familiarization and applicability determinations) that owners or operators of refrigerant-containing appliances with a refrigerant charge size of between 15 and 50 pounds perceive that they would need to engage in prior to the effective date of the rule, the length of time the commenter estimates the activity would take, and any available information that would substantiate that estimate. For example, EPA seeks comment on whether they would need to modify or initiate a contractual relationship with a servicing technician firm, the length of time that would take, and information to substantiate that estimate if available.

3. What leak repair provisions is EPA proposing?

EPA is proposing leak repair requirements under subsection (h) to achieve the purposes of minimizing releases and maximizing the reclamation of regulated substances by controlling practices, processes, and activities related to the servicing, repair, or disposal of equipment that contains regulated substances and/or their substitutes (whether the regulated substance or the substitute is used neat or in blends). These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding servicing or repair of appliances, which are a type of equipment, and would involve a regulated substance or a substitute for a regulated substance.

As described in section IV.C.2.a. and b., these leak repair requirements would apply to refrigerant-containing appliances with a charge size of 15 pounds or more where the refrigerant contains an HFC or a substitute for an HFC with a GWP greater than 53. As noted in section II.B., subsection (h)(3) provides that EPA may coordinate regulations under this authority with other regulations promulgated by the Agency that involve: ''the same or a similar practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment; or . . . reclaiming.''

EPA reviewed the regulations promulgated under CAA section 608 addressing the same or similar practice, processes or activities as addressed in this proposal to consider the extent appropriate to coordinate requirements in those regulations with those proposed in this action. Specifically, EPA reviewed the leak repair requirements at 40 CFR 82.157, which do not apply to appliances containing HFCs or their substitutes. The leak repair provisions under CAA section

608 contain requirements for practices, processes, and activities related to identifying and repairing leaks in appliances that contain ODS. These practices, processes, and activities are applicable to appliances containing HFCs as, in many cases, the same types of appliances (*e.g.,* chillers, rooftop air conditioning units, supermarket systems, etc.) are used since HFCs are a substitute for ODS. EPA is not proposing new requirements in this action where the provisions in 40 CFR part 82, subpart F already apply to appliances containing HFCs and certain substitutes. EPA notes that there are existing recordkeeping requirements 40 CFR 82.156(a)(3) for technicians evacuating refrigerant from appliances with a full charge of more than 5 and less than 50 pounds of refrigerant for purposes of disposal of that appliance. EPA is not reopening any of the provisions in 40 CFR part 82 in this action, and thus, the Agency is not proposing any changes to the referenced recordkeeping requirements. Further, the Agency does not view these recordkeeping requirements as being in conflict with the proposed leak repair requirements nor does the Agency view them as redundant. EPA notes that the bulk of the appliances covered by the recordkeeping requirements at 40 CFR 82.156(a)(3) are residential air conditioning appliances, which would be exempt from the proposed leak repair provisions in this proposed action. These records are used to assess technicians' compliance with the disposal requirements for 5 to 50 pound appliances under 40 CFR part 82 subpart F and are not related to the owner/operator's compliance with the leak repair requirements.

As described in greater detail in the following sections, the proposed leak repair provisions would require action if an appliance has been found to be leaking above the applicable leak rate threshold. The proposed leak repair provisions would generally not necessitate any specific action for appliances that are not leaking above the applicable leak-rate threshold, although the leak rate calculations and certain recordkeeping requirements would apply to appliances that are not leaking above the threshold. While EPA is proposing to adopt the same applicable leak rates for the leak repair requirements under subsection (h) as applies under 40 CFR 82.157, as described in section IV.C.3.b. of this preamble, EPA is proposing requirements for identifying and potentially repairing leaks sooner (see section IV.C.4. of this preamble for proposed requirements for ALD systems).

a. Leak Rate Calculations

EPA is proposing to adopt requirements for leak rate calculations as part of the proposed leak repair requirements under subsection (h). Under these proposed requirements, refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for and HFC with a GWP above 53 would require a leak rate calculation, if the appliance is found to be leaking. Accordingly, under subsection (h), EPA is proposing to require that the leak rate of covered appliances be calculated every time refrigerant is added to an appliance, unless the addition is made immediately following a retrofit, installation of a new appliance, or qualifies as a seasonal variance, as described in this and subsequent sections.

In this action, EPA is not proposing to require the repair of all leaks, but rather to require repair of leaks such that the appliance is below the applicable leak rate threshold. Thus, calculation of the leak rate is necessary to determine where further action (*i.e.,* repair) is required, since owners or operators may not be able to determine compliance without calculating the leak rate each time refrigerant is added to the appliance. For example, if an appliance owner adds refrigerant to the appliance but does not calculate the leak rate, the owner would have no means of determining if the appliance's leak rate was below the applicable leak rate threshold. Hence, the owner would not know if further action was warranted. The leak rate calculation is an important step for owners and operators to determine if a leak must be repaired and to the applicable leak rate threshold to which it would need to be repaired (as discussed in section IV.C.3.b). EPA considers that the leak rate calculation provisions under 40 CFR 82.157(b) are appropriate for the refrigerant-containing appliances proposed in this action and is proposing to establish analogous requirements for equipment covered under the subsection (h) leak repair provisions.

EPA is proposing two methods for calculating the leak rate for an applicable appliance under subsection (h) in this action: the annualizing method and the rolling average method. These leak rate calculation methods are described in section IV.A.1. This approach of providing two different methods for calculating the leak rate, as well as the specific leak rate calculation methods proposed, are the same as those described and provided in 40 CFR part 82, subpart F. EPA is proposing that these two methods could be used similarly to how they can be used under subpart F. Based on EPA's experience under subpart F, there are advantages in the flexibility provided by having two different methods. The strength of the annualizing method is that it is future oriented and allows the owner or operator to ''close out'' each leak event so long as the requirements are followed and does not lump past leak events with the current leak event. It considers the amount of time since the last refrigerant addition and then scales that up to provide a leak rate that projects the amount of refrigerant lost over a whole year if the leak is not fixed. As a result, this formula will yield a higher leak rate for smaller leaks if the amount of time since the last repair was shorter. This approach can contribute to minimizing the releases of HFCs or their substitutes by requiring more thorough leak inspections and verified repairs sooner. The rolling average method also has its strengths. It accounts for all refrigerant additions over the past 365 days or since the last successful follow-up verification test showing that all identified leaks were successfully repaired (if less than 365 days). If an owner or operator verifies all identified leaks are repaired, this method would also allow an owner or operator to ''close out'' a leak event. If there is no follow-up verification test showing that all identified leaks were successfully repaired within the last year, the leak rate would be based completely on actual leaks in the past year. This retrospective approach measures actual performance and if leaks are identified and fixed quickly, an appliance may never reach the applicable leak rate, thus limiting and minimizing the releases of HFCs or their substitutes from leaks.

In the 2016 CAA section 608 Rule (81 FR 82272, November 18, 2016), EPA finalized that the same leak rate calculation must be used for all appliances at the same facility for appliances subject to the CAA leak repair provisions. EPA is proposing to similarly require that the same method of leak rate calculation be used for all refrigerant-containing appliances at the same facility for appliances subject to the proposed leak repair provisions in this action. This aspect of the proposal helps ensure that the requirements are followed consistently at a facility. As noted above, having the option to choose between one of two methodologies to calculate the leak rate

provides flexibility to the owners and operators of affected refrigerant-containing appliances. However, once a method is chosen, it is necessary for the owner or operator to continue using the same methodologies so leak rates are consistently calculated for the appliances. The two methods use two different paradigms to determine leak rate—one is forward-looking/predictive, while the other is looking back/retrospective. If an owner or operator were to switch between methods, they would not get an accurate calculation (because the time frame being evaluated would be different in each method).

In either methodology of calculating the leak rate, EPA is proposing that when calculating the leak rate, any purged refrigerant that is destroyed would not be counted towards the leak rate. To qualify for this exemption, the purged refrigerant would be required to be destroyed at a verifiable destruction efficiency of 98 percent or greater.

EPA is seeking comment on all aspects of its proposal related to leak rate calculations under subsection (h). EPA is particularly requesting comment on if there are any alternative leak rate calculations that could be conducted to identify whether a system is leaking above the applicable trigger leak rate. EPA is also requesting comment on calculating the amount of refrigerant lost, without having to add refrigerant, as a means of calculating the leak rate. For example, an owner or operator could evacuate all of the refrigerant from an appliance, weigh it, and compare it to the full charge of the appliance. Alternatively, EPA is aware that certain types of ALD systems can infer the amount of refrigerant that has leaked from an appliance based on operating characteristics (more detail in section IV.C.4. of this preamble) and EPA is seeking comment on the feasibility and technical accuracy of using the amount of refrigerant that such a system identifies as having been lost from the appliance in the leak rate calculation, as a means of identifying the leak rate.

b. Requirement To Repair Leaks, Timing and Applicable Leak Rates

EPA is proposing to establish a number of requirements related to the repair of leaks under subsection (h) related to determining when a leak needs to be repaired, the extent of the repair required, and the timing of such repairs. EPA is proposing to establish timing requirements for the repair of leaks in refrigerant-containing appliances with a charge size of 15 pounds or more with a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53. Under this proposal, owners or operators would be required to identify and repair leaks within 30 days (or 120 days if an industrial process shutdown is required) of when refrigerant is added to an appliance that has exceeded the applicable leak rate. These proposed timing requirements are consistent with those requirements found at 40 CFR 82.157(d) to repair leaks for ODS-containing equipment. Repairing leaks in a timely manner helps serve the purposes identified in subsection (h)(1). For example, timely repair is critical to reducing the emissions of refrigerants from leaking appliances, and thus to minimizing releases of HFCs from equipment. In addition, by repairing leaks in a timely manner, additional HFC refrigerant will be subsequently available for reclamation, which supports maximizing reclaiming of HFCs. Also, equipment that is in good repair, is better able to operate in an efficient manner.

In some unforeseen circumstances, repair of leaks may require additional time beyond that of the proposed timeframe. EPA is proposing that extensions may be available for owners or operators to repair leaks if certain conditions are met, which would further serve the purposes identified in subsection (h)(1) of ensuring the safety of technicians and/or minimizing the release of regulated substances. Among these conditions, EPA is proposing that one or more must be met to qualify for additional time. Extensions for the leak repair would be available if the appliance is located in an area subject to radiological contamination or shutting down the appliance will directly lead to radiological contamination. EPA is proposing that in this case, additional time would be permitted to the extent necessary to complete the repairs in a safe working environment. An extension would also be available to owners or operators if the requirements of any other Federal, state, local, or Tribal regulations would make a repair within 30 days (or 120 days if an industrial process shutdown is required) impossible. Additional time would be permitted to the extent needed to comply with the applicable regulations. EPA is also proposing there would be extensions available if components must be replaced as a part of the repair and they are not available within the leak repair timeframe of 30 days (or 120 days if an industrial process shutdown is required). In this case, additional time would be permitted of up to 30 days after receiving the needed component, and the total extension could not exceed 180 days (or 270 days if an industrial process shutdown is required) from the date of the appliance exceeded the applicable leak rate. In all cases of potential extensions to the leak repair timeframe, an owner or operator would still be required to repair leaks that the technician has identified as significantly contributing to the exceedance of the applicable leak rate and that do not require additional time and verify those repairs within the initial 30 days (or 120 days if an industrial process shutdown is required). Owners or operators would also be required to document all repair efforts and provide a reason for the inability to repair the leak within the initial 30-day (or 120-day if an industrial process shutdown is required) time period. All extension requests must be submitted electronically in a format specified by EPA and include pertinent information as described in the proposed regulatory text at § 84.106.

EPA is proposing that a leak is presumed to be repaired if there is no further addition of refrigerant to the equipment for 12 months after the repair or if there are no leaks identified by either the required periodic leak inspection(s) or an ALD system, where applicable. Further information on the proposed requirements for ALD systems are described in section IV.C.4. While EPA is proposing to require ALD systems for certain equipment, there may be some cases where an owner or operator chooses to use ALD systems for equipment where it is not required. Whether use of the ALD system is due to requirements as proposed in section IV.C.4. or used as a compliance option in lieu of leak inspections (see section IV.C.3.d.) for a specific appliance, if the ALD system detects a leak in the 12-month period after a successful leak repair, the leak repair would be presumed to have subsequently failed unless the owner or operator can document that the ALD system leak detection was due to a new leak unrelated to the previously repaired leak. Such documentation would include but not be limited to the records required to be kept under proposed 40 CFR 84.108(i). Additional information on leak inspections is described in section IV.C.3.d. If an appliance is mothballed, EPA is proposing that the timeframe for repair, inspections, and verification tests would be temporarily suspended and resume when additional refrigerant is added to the appliance (or component of an appliance is the leaking component was isolated).

As noted earlier, under the CAA section 608 implementing regulations at 40 CFR 82.157, specific leak rates are

used to determine whether a repair is needed for an appliance and also the degree to which the leak must be repaired, as leaks must be repaired if the appliance exceeds the applicable leak rate (which varies depending on the type of appliance) and must be repaired such that the leak rate is brought below the applicable leak rate. *See* 40 CFR 82.157(c) and (d). For the leak repair requirements under subsection (h), EPA is proposing to use a similar approach for determining when leaks must be repaired and the degree to which they must be repaired. EPA is also proposing to apply the same applicable leak rates for certain types of refrigerant-containing appliances covered in this proposal that contain HFCs or their substitutes as would apply to the same types of appliances under 40 CFR 82.157(c) if it contained an ODS refrigerant. Thus, EPA is proposing that the applicable leak rates for refrigerant-containing appliances with a charge size of 15 pounds or more with a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53 would be as follows:

- 20 percent leak rate for commercial refrigeration equipment;
- 30 percent leak rate for IPR equipment; and
- 10 percent leak rate for comfort cooling appliances or other refrigerant-containing appliances not covered as commercial or industrial refrigeration equipment.

EPA is proposing that these applicable leak rates per the type of appliance are appropriate for the proposed leak repair provisions in this action under subsection (h) of the AIM Act. The applicable leak rates were established to limit and minimize the releases of ODS refrigerant and were updated to be more stringent in the 2016 CAA section 608 Rule (81 FR 82272, November 18, 2016). EPA is proposing to adopt applicable leak rates that mirror those that are currently in effect for ODS-containing appliances under the 2016 CAA section 608 Rule. These rates were in effect for appliances containing 50 or more lbs of HFCs for a period of time, and, after reviewing the information and analysis that supported application of these leak rates to that HFC equipment, EPA has determined it is appropriate to propose them in this action. These applicable leak rates are relevant for minimizing releases of HFCs from refrigerant-containing appliances that contain HFCs. This proposal draws on EPA's experience implementing similar requirements under section 608, where these thresholds have provided a practical and effective method for determining when leaks must be repaired. EPA notes in support of the 2016 CAA section 608 Rule, EPA reviewed data from the lowest-emitting equipment to gauge technological feasibility and then reviewed other datasets.[61] The Agency considered whether a lower percent leak rate for some, or all of the categories of appliances would be more appropriate to propose in this rulemaking for those that use refrigerants that contain HFCs and/or substitutes for HFCs. EPA notes that, as a general matter, equipment in good repair is typically able to operate more efficiently. EPA reviewed the docket for the 2016 CAA section 608 Rule, which lowered the applicable leak rates for each of the appliance categories.[62] [63] In that action, EPA evaluated leak rate data of appliances in each of the applicable categories to determine the appropriate applicable leak rates. EPA also reviewed information from stakeholders shared during public meetings held in the development of this proposal.[64] EPA is proposing to use the same applicable leak rates for each category of appliances as found under 40 CFR 82.157. While EPA is not proposing changes to the applicable leak rates for categories of refrigerant-containing appliances as they involve HFCs and covered substitutes for HFCs, the Agency notes that we could revisit the applicable leak rates as appropriate to support the overall purposes of subsection (h) of the AIM Act.

This proposal includes refrigerant-containing appliances with charge sizes that are below the 50-pound charge size threshold for ODS-containing appliances under 40 CFR 82.157. As discussed in section IV.C.2., EPA is proposing to apply leak repair requirements to appliances using an HFC and/or a substitute for HFCs as a refrigerant (neat or in blends) based on a charge size threshold of 15 pounds or greater, with certain exceptions as discussed in section IV.C.2.a. above. EPA is proposing to use the same leak rate across categories of equipment for all covered appliances. In other words, a 20 percent leak trigger rate would apply for commercial refrigeration equipment with a full charge size of 15 pounds or more, and a 10 percent trigger leak rate would apply for comfort cooling appliances with a full charge size of 15 pounds or more.

Refrigerant-containing appliances with 15–50 pounds of refrigerant in the applicable subsectors are proposed to be covered by the appropriate listed categories and with the applicable trigger leak rates. For refrigerant-containing appliances in certain subsectors and applications that have not been previously covered under 40 CFR 82.157, as noted in section IV.C.2.b., EPA is proposing determinations for the applicable leak rates. For refrigerated transport—rail, EPA is proposing that this application would be considered under the comfort cooling and other appliances category and have an applicable leak rate of 10 percent.

EPA is seeking comment on all aspects of this proposal and in particular on the proposed applicable leak rates for appliances in the subsectors and applications noted in section IV.C.2.b. of this proposal. EPA is also seeking comment on its proposal to include an explicit presumption that a leak is presumed to be repaired if one of the listed conditions is met, such as there being no further addition of refrigerant to the equipment for 12 months after the repair. While a similar, though not identical, presumption is included in similar regulations under section 608 of the CAA, EPA is also proposing to include a definition of ''repair'' to the regulatory provisions under subsection (h), which is not a defined term in the regulations under CAA section 608. EPA is particularly interested in comments on whether the presumption is necessary or helpful, if the proposed definition of ''repair'' is finalized.

c. Verification Testing

EPA is proposing requirements for initial and follow-up verification for refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53 as a part of the proposed leak repair provisions under subsection (h). Verification testing involves important practices, processes, and activities regarding the repair and servicing of equipment. The tests are performed shortly after an appliance has been

[61] For more details on this analysis see 81 FR 82272, 82317; Technical Support Document: Analysis of the Economic Impact and Benefits of Final Revisions to the National Recycling and Emission Reduction Program, September 2, 2016, available at *https://www.regulations.gov/document/EPA-HQ-OAR-2015-0453-0225.*

[62] Docket No. EPA–HQ–OAR–2015–0453.

[63] For further information, please see the discussion in the 2016 CAA section 608 rule at 81 FR 82272, 82317 and the technical support document, Analysis of the Economic Impact and Benefits of Final Revisions to the National Recycling and Emission Reduction Program, available in the docket for the 2016 CAA section 608 rulemaking (EPA–HQ–OAR–2015–0453).

[64] EPA held stakeholder meetings for public input on November 9, 2022 and March 16, 2023 as well as solicited feedback through a webinar for the EPA GreenChill Partnership program on April 12, 2023.

repaired to confirm that the leak has been successfully repaired. Without the verification tests, it may take additional time for the owner or operator to realize that the repair has been unsuccessful and during that time refrigerant could continue to leak from the appliance. EPA is proposing that the verification tests must be performed for all leak repairs to ensure that the leak repair is done correctly the first time, which would help minimize any releases of HFCs from the appliance, and also help maximize HFCs available for eventual reclamation by limiting such releases.

Thus, as part of the proposed requirements for leak repair verification tests under subsection (h), an owner or operator would be required to conduct initial and follow-up verification tests within specified timeframes on each leak that is repaired. The initial verification test would be required to be performed within 30 days (or 120 days if an industrial process shutdown is required) of an appliance exceeding the applicable leak rate and must demonstrate that leaks are repaired, where a repair attempt was made. The initial verification test is to verify that the leak has been repaired prior to adding refrigerant back into the appliance and the follow-up verification test confirms that the repair held after refrigerant has been added and the appliance has been brought back to normal operating characteristics. The follow-up verification test would be required to be conducted within 10 days of a successful initial verification test or 10 days after the appliance has returned to normal operating conditions (if the appliance or isolated component of the appliance was evacuated to perform repairs). EPA is proposing that the follow-up verification test is necessary to confirm that the leak repair has held after the refrigerant-containing appliance has been recharged, pressurized, and returned to normal operating conditions. Thus, these provisions are proposed in this action to ensure leaks are properly repaired and to ensure emissions are minimized. EPA also notes that this process of performing an initial verification test and a follow-up verification test has been a part of the similar leak repair provisions for affected ODS-containing equipment under CAA section 608. For additional discussion on the terminology, timing, and purposes associated with the verification tests in detail in the context of the requirements under CAA section 608, please refer to the 2016 CAA section 608 Rule (81 FR 82272, 82324, November 18, 2016).

EPA is also considering that in some cases, a follow-up verification test is impossible; for example, when it would be unsafe to be present when the system is at normal operating characteristics and conditions. Under subsection (h), EPA is proposing language to address such situations. This approach helps serve the purpose identified in subsection (h)(1) of ensuring technician and consumer safety. EPA is proposing that where it is unsafe to be present or otherwise impossible to conduct a follow-up verification test when it would be unsafe to be present when the system is at normal operating characteristics and conditions the follow-up verification test must, where practicable, be conducted prior to the system returning to normal operating characteristics and conditions. In such situations, the owner or operator has the burden of showing that it was unsafe to be present when the system is at normal operating characteristics and conditions. EPA requests comment on whether there should be a recordkeeping requirement associated with establishing that it is unsafe to be present or otherwise impossible to conduct a follow-up verification test on the system has been returned to normal operating conditions.

EPA understands these initial and follow-up verification tests after an attempted repair of a leak as involving important practices, processes, and activities regarding the repair of equipment within the proposed leak repair provisions. These proposed requirements are designed to help ensure that leaks are repaired successfully and that the repair holds, so that repair has the intended effect of limiting emissions of HFCs or substitutes for HFCs from the appliance. EPA is proposing that if the initial or follow-up verification test indicates that a leak repair had not been successful, the owner or operator may conduct as many additional repairs and initial or follow-up verification tests as needed to achieve a successful leak repair within the applicable time period and to verify the repairs.

EPA is requesting comment on all aspects of this rulemaking. In particular, EPA is requesting comment on the applicable leak rates for each category for refrigerant-containing appliances. EPA is also requesting comment on the timing by which the initial and follow-up verification tests must be performed as a part of the proposed leak repair provisions.

d. Leak Inspections

EPA is proposing requirements for leak inspections as a part of the proposed leak repair requirements under subsection (h). These leak inspection requirements would apply to refrigerant-containing appliances that have been found to be leaking at a rate that exceeds the applicable leak rate per the appliance type. In particular, the proposed leak inspection requirements involve processes, practices, and activities regarding the repair of refrigerant-containing appliances that are designed to ensure the long-term effectiveness of a successful leak repair. Thus, the proposed requirements would help minimize any releases of HFCs from equipment over time and also help maximize HFCs available for eventual reclamation by limiting such releases.

EPA is proposing that leak inspections would be required for refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP greater than 53 that are found to be leaking above the applicable leak rate and have had one or more leaks repaired. Leak inspection frequency would be dependent on the type of appliance and the size of the appliance (by refrigerant charge size). As described in greater detail later in this section, an ALD system that is being used to monitor an appliance or portions of an appliance may be used as a compliance option in lieu of quarterly or annual leak inspections, whether the ALD system is required to be used under requirements in this proposal or the ALD system is used voluntarily on an appliance where it would not be required under this proposal. Where an ALD system is not being used on an appliance or on portions of an appliance, all leak inspection requirements proposed would be required for the appliance or the portions of the appliance that are not being monitored by an ALD system. If an ALD system is being used to comply with the leak inspection requirements for an appliance or portions of an appliance (per proposed regulatory requirement or voluntarily), certain regulatory requirements must be met as proposed (see section IV.C.4.).

For commercial refrigeration and IPR appliances that have a charge size of 500 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP greater than 53, EPA is proposing that leak inspections be performed every three months after the equipment is found to be leaking above the applicable leak rate until the owner or operator can demonstrate that the equipment has not exceeded the applicable leak rate for four consecutive quarters. For commercial refrigeration and IPR appliances that have a charge size between 15 and 500 pounds of a

refrigerant that contains an HFC or a substitute for an HFC with a GWP greater than 53, EPA is proposing that leak inspections be performed once per calendar year after the equipment is found to be leaking above the applicable leak rate until the owner or operator can demonstrate that the equipment has not exceeded the applicable leak rate for one year (*i.e.,* 12 months). For comfort cooling and other appliances that have a charge size of 15 pounds or above of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53, EPA is proposing that leak inspections be performed once per calendar year after the equipment is found to be leaking above the applicable leak rate until the owner or operator can demonstrate that the equipment has not exceeded the applicable leak rate for one year (*i.e.,* 12 months). In each case, to demonstrate that the equipment has not exceeded the applicable leak rate, a leak rate calculation is done during a leak inspection as described in section IV.C.3.a. of this proposal. EPA is proposing that it is appropriate to require more frequent leak inspections for larger commercial refrigeration and IPR appliances (*i.e.,* charge sizes at or above 500 pounds), as the larger charge size means that potential emissions from the appliance are greater if a leak is not properly repaired.

In this action, EPA is also separately proposing requirements for the use of ALD systems for commercial refrigeration and IPR appliances that have a charge size of 1,500 pounds or more of refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53 (see section IV.C.4. of this proposal). Where ALD systems would be required to monitor leaks in appliances, EPA is proposing that leak inspections for the appliances would be required after exceeding the applicable leak rate and undergoing a repair only for the portions of the appliance that are not being monitored by the ALD system (*e.g.,* if part of the appliance is not in an enclosed space). This proposal is based on an understanding that where the ALD system is monitoring the appliance, it serves the function of monitoring for leaks. Thus, a requirement for performing periodic leak inspections on those portions of the appliance would be unneeded. EPA considers the leak inspections that are proposed for codification at 40 CFR 84.106(g) and the requirements related to ALD systems that are proposed for codification at 40 CFR 84.108 to be separate. That is to say, EPA would be proposing these leak inspections irrespective of any mandatory ALD system requirement and vice versa. However, recognizing that some equipment could be subject to both requirements, if both proposals are finalized, to help coordinate the requirements, EPA is proposing a limited exception to the quarterly and annual leak inspection requirements if ALD systems are being used and meet certain requirements. This proposed limited exception is intended to allow the use of the ALD system in those circumstances to serve as a compliance option for the leak inspection requirement.

For further information and requirements related to ALD systems proposed in this action, refer to section IV.C.4. Likewise, EPA is proposing that if an owner or operator is voluntarily using an ALD system to monitor leaks in a refrigerant-containing appliance that would not be subject to the proposed requirement to use an ALD system (*e.g.,* the equipment has a charge size below 1,500 pounds), any periodic leak inspections would only need to be performed after the applicable leak rate is exceeded for the portions of the appliance where the ALD system is not monitoring for leaks. Again, where the ALD system is monitoring the appliance, it would serve the function of monitoring for leaks in the equipment, and periodic inspections on those portions of the equipment would be unneeded. EPA is also proposing that, where an appliance exceeds the applicable leak rate, an owner or operator may choose to use an ALD system, where not required under proposed requirements in section IV.C.4. (*i.e.,* for certain appliances with a charge size below 1,500 pounds), as a compliance option in lieu of the proposed requirements for periodic leak inspections. However, leak inspections would need to be performed for the portions of the appliance where the ALD system is not monitoring for leaks. Where an owner/operator wishes to use an ALD system in lieu of proposed regulatorily required leak inspections, the ALD system needs to meet the requirements established elsewhere in this proposal (including annual ALD system audit and calibration requirements). The owner or operator would be required to follow certain reporting and recordkeeping requirements to show the ALD system is meeting the intended functionality and monitoring leaks effectively (as described in section IV.C.4.b.).

EPA is requesting comment on all aspects of this proposal. In particular, EPA is seeking comment on the proposed requirements for leak inspection. EPA welcomes comment on the frequency of leak inspections required based on the charge size of the equipment as well as the use of ALD system (whether required as part of this proposal or not) to satisfy the requirements for leak inspections.

e. Chronically Leaking Appliances

As part of the proposed leak repair provisions under subsection (h), EPA is proposing to include specific requirements for refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53 that EPA would consider as chronically leaking. The proposed requirements are designed to gather information and support efforts to address such chronic leaks, which would have the effect of further minimizing emissions from equipment.

As discussed in section IV.C.2. above, under this proposal, covered appliances include refrigerant-containing appliances with charge sizes of 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53. EPA is proposing that an appliance would be considered a chronically leaking appliance if the appliance leaks 125 percent or more of its full charge within a calendar year. The proposed requirements for chronically leaking appliances are similar, but not identical to, analogous requirements under 82.157(j). For such chronically leaking appliances, owners and operators are required to submit reports describing the efforts taken to identify leaks and repair the appliance. Under subsection (h), EPA is proposing to establish a reporting requirement for covered appliances that are considered chronically leaking.

To better serve the purposes of minimizing releases of regulated substances and allow EPA to more easily verify the information being reported, EPA is proposing to standardize the reporting format for chronically leaking appliances. EPA is proposing that the reports must be submitted no later than March 1 following the calendar year of the ≥125 percent leak. EPA is proposing that these reports cover basic identification information (*i.e.,* owner name, facility name, facility address where appliance is located, and appliance ID or description), appliance type (comfort cooling, IPR, or commercial refrigeration), refrigerant type, full charge of appliance (pounds), annual percent refrigerant loss, dates of refrigerant addition, amounts of refrigerant added, date of last successful

follow-up verification test, explanation of cause of refrigerant losses, repair actions taken, and whether a retrofit or retirement plan been developed for the appliance, and, if so, the anticipated date of retrofit or retirement. EPA proposes that these reports be submitted electronically in a format specified by EPA. EPA anticipates that the information in these reports would either be contained in the records EPA is proposing that owner or operators would be required to maintain, or they are the type of information that would be on hand during the ordinary course of business. Because of the amount of refrigerant emitted, chronically leaking appliances warrant special attention. These reporting requirements for chronically leaking equipment are designed to help ensure that owner or operators are complying with the leak repair provisions and that they have taken appropriate steps to identify the leaks and correct the root cause of those leaks. These reports would allow EPA to evaluate compliance with the regulatory requirements and to identify entities that may benefit from compliance assistance and other outreach efforts. These reports would also allow EPA to assess common root causes for appliances that chronically leak, which would facilitate consideration of approaches to mitigate these leaks and minimize the releases of HFCs from such equipment. EPA discusses whether this information is entitled to confidential treatment in section V.A.1. of this document.

EPA is proposing to set the reporting threshold for appliances that leak 125 percent of the full charge within a calendar year, as the Agency intends to avoid capturing refrigerant-containing appliances affected by unavoidable losses of full charge. In order to be subject to the requirement, appliances would have to lose their full charge and then a significant quantity more within a single calendar year. EPA requests comment on the 125 percent threshold and whether, given the focus of minimizing releases of regulated substances, that threshold should be lowered. For example, EPA is considering lowering the threshold to 110 percent to avoid capturing refrigerant-containing appliances affected by unavoidable losses of full charge, but a lower amount leaked beyond a full charge would be required to trigger the provisions for chronically leaking appliances.

f. Retrofit and Retirement Plans

EPA is proposing to include requirements for retrofit and retirement plans in the proposed leak repair provisions under subsection (h) for applicable refrigerant-containing appliances that contain HFCs or certain substitutes for HFCs as a refrigerant. These requirements reduce emissions by capping the amount of time an appliance can remain in operation when it is known to be leaking above the leak rate threshold. Owners or operators may choose to retrofit or retire a leaking appliance rather than repair a leak, or, in some situations, may be required to retrofit or retire the appliance if successful leak repair cannot be achieved and verified. The proposed requirements would also further serve the purposes of minimizing releases and maximizing the reclaiming of HFCs, as proper retrofit or retirement of a leaking appliance would ensure that any further HFC emissions from such equipment are mitigated. Additionally, in the process of retrofitting or retiring an appliance, the refrigerant that was remaining in the leaking appliance would typically be recovered and could then subsequently be reclaimed.

EPA is proposing requirements for developing retrofit and retirement plans for refrigerant-containing appliances where leaks cannot be repaired, or an owner or operator chooses to retrofit to a lower GWP refrigerant (where available) or retire an appliance rather than repair a leak. The proposed requirements would apply to refrigerant-containing appliances with 15 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53. The provisions proposed in this action would provide the details on the timing for creating a retrofit or retirement plan for covered refrigerant-containing appliances, and what must be contained in a retrofit or retirement plan. EPA is proposing that a retrofit or retirement plan be created within 30 days of certain scenarios. The Agency understands this timing is sufficient for an owner or operator to either attempt to repair the leak with all necessary requirements as described in section IV.C.3.b. or make a business decision to directly begin the retrofit or retirement process. It is necessary to cap this timing requirement to minimize emissions from leaks in the case where an owner or operator fails to take any action after finding that their applicable refrigerant-containing appliance is leaking above the applicable leak threshold. After 30 days, the owner or operator must begin developing a retrofit or retirement plan. The following scenarios describe when a retrofit or retirement plan must be developed:

- An appliance is leaking above the applicable leak rate and the owner or operator intends to retrofit or retire the appliance rather than repair the leak;
- An appliance is leaking above the applicable leak rate and the owner or operator fails to take action to identify or repair the leak; or
- An appliance is continuing to leak above the applicable leak rate after an attempted leak repair and verification testing.

Developing the retrofit or retirement plan is a key process in ensuring that each step of the plan is successfully performed such that releases of HFCs are minimized and the reclaiming of the HFCs can be maximized. EPA is proposing that the retrofit or retirement plan include information regarding the location of the appliance, characteristics of the appliance, a procedure for how the appliance will be converted to accommodate a different refrigerant (if the appliance is being retrofitted), plans for the disposition of any recovered refrigerant and the appliance (if the appliance is being retired), and a schedule for the completion of the appliance retrofit or retirement. Characteristics of the appliance that would be retrofitted or retired include the type and full charge of the refrigerant used in the appliance, and for retrofitted, the type and full charge of the refrigerant to which the appliance will be retrofitted. In describing how the appliance would be retrofitted, the owner or operator must include an itemized procedure for converting the appliance to a different refrigerant, including changes required for compatibility. This would also include any changes for compatibility that relate to safety considerations to ensure the safety of technicians and consumers when converting an appliance to a different refrigerant, which would further serve one of the purposes identified in subsection (h)(1). EPA is also proposing that the retrofit or retirement plan must include information on how any recovered refrigerant is being dispositioned. In the case of retiring an appliance, the retirement plan would need to include how the appliance is being dispositioned. EPA is proposing that the retrofit or retirement plan include a schedule for completion of the retrofit or retirement and, unless additional time is granted, that the schedule would not exceed one year of the plan's date (not to exceed 12 months from when the plan was finalized).

EPA is proposing that an owner or operator may request relief from the provisions of a retrofit or retirement plan if they are able to establish that an

appliance is no longer leaking above the applicable leak rate within 180 days of creating the plan, and the owner or operator agrees to repair all identified leaks within one year of the plan's date. The owner or operator would be required to submit specified information to EPA, including information regarding leaks in the appliance, descriptions of the work completed/to be completed, and more, as found in the proposed regulatory text.

For IPR equipment, EPA is proposing that extensions could be requested in cases where requirements or other applicable Federal, state, local, or Tribal regulations would make it impossible to complete the retrofit or retirement within one year. In this case, owners or operators could be permitted additional time to the extent needed to comply with the applicable regulations. EPA is also proposing that extensions could be requested for IPR equipment if the equipment is custom-built and the supplier of the appliance or one of its components has quoted a delivery time of more than 30 weeks. In such cases, the appliance or component must be installed within 120 days of receipt. If additional time is needed, the owner or operator would need to submit a request for the additional time to EPA. Further, EPA is proposing that extensions could be requested to complete a retrofit or retirement if the IPR equipment is located in an area subject to radiological contamination or shutting down the appliance will directly lead to radiological contamination. EPA is proposing that in this case, additional time would be permitted to the extent necessary to complete the retrofit in a safe working environment. EPA is not proposing extensions specifically applicable to Federally owned equipment (see, *e.g.,* the provisions at 40 CFR 82.157(i)(3)) because EPA believes these circumstances can be addressed under the other proposed extension provisions, but EPA requests comment on this.

EPA is requesting comment on all aspects of this proposal, and, in particular, the proposed provisions for retrofit and retirement plans for applicable refrigerant-containing appliances. EPA is requesting comment on the timing for developing retrofit or retirement plans and the timing for executing these plans. EPA is also requesting comment on if the Agency should require that refrigerant be recovered as a part of the retrofit or retirement plan, or if that is already sufficiently covered by requirements under 40 CFR part 82, subpart F. Further, EPA is seeking comment on requiring that if an owner or operator is developing a retrofit plan, they must include that a lower GWP refrigerant will be used in the retrofitted appliance. EPA notes that it is not assuming early retirement of appliances as a result of the proposed rule provisions. EPA is seeking comment on any potential impacts of the proposed leak repair provisions on the retirement of affected refrigerant-containing appliances.

g. Recordkeeping and Reporting

EPA is proposing to include recordkeeping and reporting requirements to support compliance with the proposed leak repair provisions under subsection (h) for applicable refrigerant-containing appliances that contain HFCs or certain substitutes for HFCs as a refrigerant. For example, the requirements would control recordkeeping and reporting practices, process, or activities for servicing and repair that involves HFCs or a substitute for an HFC. As noted in section II.B. of this document, EPA's authority to require recordkeeping and reporting under the AIM Act is also supported by section 114 of the CAA, which applies to the AIM Act and rules promulgated under it as provided in subsection (k)(1)(C) of the AIM Act.

As discussed in section IV.C.2. above, this proposal covers refrigerant-containing appliances with charge sizes of 15 pounds or higher of a refrigerant that contains an HFC or a substitute for an HFC that has a GWP above 53. The recordkeeping and requirements related to the leak repair requirements under subsection (h) would be applicable to the full range of appliances that are subject to the proposed leak repair provisions, including those containing at least 15 pounds of refrigerant with limited exemptions, as described in section IV.C.2.b. for certain appliances. The proposed recordkeeping and reporting requirements provide critical information about whether required actions were taken and are part of the suite of compliance tools included in this proposal. Compliance with the overall leak repair requirements is intended to minimize the release of HFC and substitute refrigerants and the Agency considers these recordkeeping and reporting requirements necessary to readily assess compliance. Records that would demonstrate noncompliance or are incomplete may be used for enforcement purposes. The proposed requirements are informed in part by EPA's consideration of its experience implementing similar regulations under CAA section 608 at 40 CFR 82.157 and the recordkeeping and reporting requirements that have been used to assure compliance with those provisions.

EPA is proposing recordkeeping requirements for refrigerant-containing appliances with a charge size of 15 pounds or more of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 under subsection (h) that are similar to those at 40 CFR 82.157(l). Where EPA is proposing requirements for recordkeeping, we are proposing that record be maintained for three years in either paper or electronic format. An owner or operator may contract out the record generation responsibilities but retains ultimate liability for compliance and must be able to access these records electronically or in hard copy from the facility where the appliance is located. All recordkeeping requirements can be found in § 84.106(l) of the proposed regulatory text. These records would be the primary means for the facility to demonstrate compliance with the leak repair requirements, and EPA would review them when evaluating compliance. EPA could access these records in various ways, including, but not limited to, via on-site review of the records or requesting them via an information request. In general, EPA is proposing the following recordkeeping requirements for owners and operators under subsection (h):

- Maintain records documenting the full charge of appliances;
- Maintain records, such as invoices or other documentation showing when refrigerant is added or removed from an appliance, when a leak inspection is performed, when a verification test is conducted, and when service or maintenance is performed;
- Maintain retrofit and/or retirement plans;
- Maintain retrofit and/or extension requests submitted to EPA;
- If a system is mothballed to suspend a deadline, maintain records documenting when the system was mothballed and when it was brought back on-line (*i.e.,* when refrigerant was added back into the appliance or isolated component of the appliance);
- Maintain records of purged and destroyed refrigerant if excluding such refrigerant from the leak rate;
- Maintain records to demonstrate a seasonal variance; and
- Maintain copies of any reports submitted to EPA under the proposed reporting requirements in this action.

EPA is proposing reporting requirements for refrigerant-containing appliances that with a charge size of 15 pounds or more of a refrigerant containing an HFC or a substitute for an HFC with a GWP above 53 under

subsection (h) that are similar to those at 40 CFR 82.157(m). The proposed reporting requirements include notifications to EPA that include specified information when:

- The owner or operator is seeking an extension to complete repairs;
- The owner or operator is seeking an extension to complete a retrofit or retirement plan;
- The owner or operator is seeking relief from the obligation to retrofit or retire an appliance;
- When an appliance leaks 125 percent or more of the full charge in a calendar year;
- The owner or operator is excluding purged refrigerants that are destroyed from annual leak rate calculations for the first time.

Additional detail on these proposed recordkeeping and requirements is available in the proposed regulatory text. Proposed recordkeeping and reporting requirements in this action for ALD systems are described in section IV.C.4.b.

EPA is requesting comment on all aspects of this proposal, and, in particular, the recordkeeping and reporting requirements associated with the leak repair provisions in this proposal. EPA is requesting comment on the information required in the recordkeeping and reporting provisions and if there is any additional information that would be relevant for the proposed leak repair requirements in this action.

4. Automatic Leak Detection Systems

ALD systems on refrigerant-containing appliances are refrigerant leak detection technologies calibrated to continuously monitor a refrigerant-based system(s) for evidence of leaks and alert an operator upon detection of a leak. Repairing leaks sooner further minimizes emissions. Where ALD systems are used, it can result in early and effective detection of leaks, so that the leaks can be repaired and emissions of regulated substances or their substitutes can quickly be mitigated. As part of the proposed regulatory requirements to implement subsection (h)(1), EPA is proposing to require that ALD systems be used for certain new and existing refrigerant-containing appliances to detect leaks, which would trigger subsequent requirements. These provisions would control practices, processes, or activities regarding servicing, repair or installation of such appliances, which are a type of equipment, and would involve a regulated substance or a substitute for a regulated substance. When an ALD system detects a leak in a refrigerant-containing appliance covered by this proposal, an owner or operator of the appliance would be required to either perform practices, processes, and/or activities to determine whether servicing or repair of the appliance is necessary (*i.e.,* calculating a leak rate and assessing it compared to the applicable leak rate for the type of appliance) or, alternatively, preemptively repair the leak (*i.e.,* before adding refrigerant and calculating the leak rate). EPA is proposing to explicitly permit preemptive repair of the leak as a compliance option to avoid the need to add refrigerant to an appliance with a known leak (which would otherwise generally be necessary to calculate the leak rate and determine if the applicable leak rate is exceeded). If the preemptive repair is being used as a compliance option, it must occur within 30 days (or 120 days where an industrial process shutdown would be necessary) of the alert. These proposed requirements are expected to facilitate prompt repair of leaks, which would further help minimize releases of regulated substances from equipment.

In the case of preemptive repair, this compliance option provides the opportunity to repair an appliance that is known to be leaking prior to the addition of refrigerant. When refrigerant is added to the appliance that underwent preemptive repair, a leak rate calculation would still be required. If the leak rate calculation (performed after the addition of refrigerant for the follow-up verification test) conducted after the preemptive repair reveals that the appliance had leaked above the applicable leak threshold, the proposed suite of leak repair requirements would still apply. The preemptive repair actions can be considered in determining whether the suite of leak repair requirements triggered by the exceedance of the applicable leak threshold have been satisfied, but the owner or operator of the appliance would still need to ensure that the leaks had been repaired according to the proposed definition of repair and that the other requirements proposed in 40 CFR 84.106 (*e.g.,* initial and follow-up verification tests, leak inspections (where applicable) and related recordkeeping) had been met.

EPA understands that for reasons other than this proposal, ALD systems already are in use to a certain extent. For example, some owners and operators may already use ALD systems to serve as an early warning system for detecting and repairing leaks. Some owners and operators may choose to install ALD systems from an economic perspective as early detection and repair of leaks can avoid costs of replacing the released refrigerant and operating equipment at suboptimal levels and/or the loss of perishable products due to failure to maintain required cooling. Further, there are provisions under 40 CFR 82.157 where an owner or operator of a covered appliance with ODS refrigerants may choose to use an ALD system in place of performing regular leak inspections as a part of the leak repair provisions under CAA section 608 at 40 CFR 82.157. Nothing in this proposal changes the requirements related to ALD systems under CAA section 608 for equipment containing only ODS refrigerants. In other words, an owner or operator of an appliance that uses ODS-containing refrigerants will continue to be required to meet any and all requirements under 40 CFR 82.157 for that appliance, including if they choose to use an ALD system to comply with requirements under 40 CFR 82.157.

Additionally, there are safety standards that apply when using certain HFCs (whether neat or in a blend) and/or substitutes for HFCs that have been classified as lower flammability. Lower flammability refrigerants in this context are those that are classified by ASHRAE as A2L refrigerants.[65] UL Standard 60335–2–40 currently requires the use of leak detectors for electrical heat pumps, air conditioners and dehumidifiers containing A2L refrigerants.[66] [67] Under that standard, leak detectors that detect pressure loss are required in cases that the prescribed A2L charge limit is exceeded (which is typically around four pounds for permanently installed applications). That standard also prescribes that refrigerant leak detectors be installed at the factory for applicable appliances

[65] ASHRAE Standard 34–2022 assigns a safety group classification for each refrigerant which consists of two alphanumeric characters (*e.g.,* A2 or B1). The capital letter indicates the toxicity class (''A'' for lower toxicity) and the numeral denotes the flammability. ASHRAE recognizes three classifications and one subclass for refrigerant flammability. The three main flammability classifications are Class 1, for refrigerants that do not propagate a flame when tested as per the ASHRAE 34 standard, ''Designation and Safety Classification of Refrigerants;'' Class 2, for refrigerants of lower flammability; and Class 3, for highly flammable refrigerants, such as the hydrocarbon refrigerants. ASHRAE recently updated the safety classification matrix to include a new flammability subclass 2L, for flammability Class 2 refrigerants that burn very slowly.

[66] UL. 2019. ''Understanding UL 60335–2–40 Refrigerant Detector Requirements.'' *https://www.ul.com/news/understanding-ul-60335-2-40-refrigerant-detector-requirements.*

[67] UL 60335–2–40, 2019. Household And Similar Electrical Appliances—Safety—Part 2–40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers. Third Edition. November 1, 2019.

and have factory established set points for detection to avoid potential buildup of concentrations of flammable refrigerants.

a. Proposed Automatic Leak Detection Requirements

EPA is proposing to require the use of ALD systems for certain RACHP equipment. Specifically, EPA is proposing to require ALD systems for IPR and commercial refrigeration appliances containing 1,500 pounds or more of a refrigerant that contains an HFC or a substitute for an HFC with a GWP above 53 for both new and existing equipment. EPA is not proposing to require ALD systems for comfort cooling appliances. As previously noted, EPA considers the leak inspections that are proposed for codification at 40 CFR 84.106(g) and the requirements related to ALD systems that are proposed for codification at 40 CFR 84.108 to be separate. However, as previously discussed, in certain circumstances the proposed leak inspection requirements would recognize use of the ALD systems that meets certain requirements under the proposed 40 CFR 84.108 as a compliance option that may be used in lieu of quarterly or annual leak inspections.

Beginning on January 1, 2025, for new refrigerant-containing appliances, EPA is proposing that an ALD system be installed as part of the overall appliance installation, either during the installation of the new appliance or within 30 days from when the new appliance is installed. EPA understands that depending on the type of ALD system, it may be more practicable to install an ALD system during the appliance installation. In other cases, additional time may be needed to secure a contractor or technician to install the ALD system, or there may be unforeseen delays in acquiring an ALD system. For existing refrigerant-containing appliances, EPA is proposing that an ALD system must be installed within one year of the effective date of the final rule.

EPA is proposing that refrigerant-containing appliances in the commercial refrigeration and IPR subsectors with a charge size of 1,500 pounds or more with a refrigerant that contains an HFC or a substitute for an HFC that has a GWP above 53 (whether the HFC or substitute is used neat or in a blend) would be required to use ALD systems. The refrigerants that would be covered are the same as for other leak repair provisions proposed in this action, but the proposed full charge size cutoff for using ALD systems (1,500 pounds) is greater than that of the other leak repair provisions in this proposal (15 pounds). EPA understands that using ALD systems for refrigerant-containing appliances that have lower refrigerant charge sizes (*i.e.,* below 1,500 pounds) may be an option an owner or operator could take so they are alerted to leaks sooner. This could also be an option an owner or operator takes for specific refrigerants. However, discussed later in this section, EPA is not proposing to require use of ALD systems for refrigerant-containing appliances with less than 1,500 pounds. Similarly, EPA also understands that owners and operators with larger charge size appliances may be more likely to have in place refrigerant management plans, routine equipment inspections, or other formal or even informal mechanisms aimed at reducing refrigerant losses.

EPA considered a number of potential options for the threshold for requiring ALD systems. The Agency considered thresholds as low as 15 or 50 pounds to match the proposed leak repair requirements or as analogous with the longstanding CAA section 608 leak repair threshold for ODS-containing appliances, respectively. The Agency also considered as high as 2,000 pounds, which is consistent with the current state requirement in California.[68] Throughout this proposal, EPA uses charge sizes to differentiate requirements; for example, EPA proposed 500 pounds as a cutoff for the frequency of inspections for certain appliances and the Agency also considered this as a potential cutoff for proposing to require ALD systems. Further, another potential cutoff considered was 200 pounds, which was used as a point of inflection for proposing certain GWP-limit based restrictions under the Technology Transitions program.[69]

EPA is also aware of other cutoffs used for requirements for using ALD systems in certain states and internationally. Across states, the Agency is aware that California[70] has a similar provision with a cutoff of 2,000 pounds that has been in place for over ten years and Washington[71] is considering a cutoff of 1,500 pounds in a recent proposal for requiring ALD systems on refrigeration equipment. Internationally, the EU[72] uses a CO_2e-based threshold, requiring that leakage detection systems be installed for stationary equipment (including refrigeration, air conditioning, heat pumps, and fire protection equipment and electrical switch gear and organic Rankine cycles) that contain 500 or more metric tons of CO_2e. For example, if a stationary refrigeration appliance is charged with R–404A (which has a GWP of 3,920), then the minimum charge size required to use a leakage detection system would be approximately 281 pounds under the EU's approach. EPA notes that it is considering using either a pounds-based approach or a CO_2e-based approach to establishing the threshold for these requirements. While there are certain advantages to CO_2e approaches, such as providing an advantage for lower GWP refrigerants, the Agency also understands that for compliance purposes, limits based on pounds also has advantages. Refrigerant decisions are based on actual amounts of refrigerant added and the leak rate calculations are also based on pounds. Therefore, EPA is proposing to set the requirement based on pounds but is soliciting comments on a CO_2e approach too.

As a consideration in setting the proposed threshold, EPA took into account to what extent ALD systems may already be in use and the types of equipment to which they are marketed. For example, many larger refrigeration appliances (*e.g.,* a charge size of 1,500 to 2,000 pounds or more) may already use ALD systems per certain state requirements or to reduce negative economic impacts associated with replacing leaking refrigerant. These larger refrigeration appliances have potential to leak greater amounts of refrigerant, such that owners and operators using an ALD system to quickly detect leaks would further support the statutory purposes in

[68] California Code of Regulations, Regulation for the Management of High Global Warming Potential Refrigerants for Stationary Sources. Available: *https://ww2.arb.ca.gov/sites/default/files/2020-07/finalfro_0.pdf.*

[69] In the proposed Technology Transitions rule (87 FR 76738, December 15, 2022), the inflection point of 200 pounds for a charge size of equipment in certain subsectors is used to propose different GWP-limit based restrictions. This point was considered based on safety standards ANSI/ASHRAE Standard 15–2019 and UL 60335–2–89, which set a charge limit set a charge limit for using lower flammability refrigerant for certain applications that vary by refrigerant but does not exceed 200 pounds.

[70] California Code of Regulations, Regulation for the Management of high Global Warming Potential Refrigerants for Stationary Sources. Available: *https://ww2.arb.ca.gov/sites/default/files/2020-07/finalfro_0.pdf.*

[71] Washington, Department of Ecology, Hydrofluorocarbons (HFCs) and Other Fluorinated Greenhouse Gases, Draft (January 27, 2023). Available: *https://ecology.wa.gov/DOE/files/9b/9b91965d-4986-4c42-aa50-fd54cb97a2a4.pdf.*

[72] Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006, May 2014, available at: *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0517.*

subsection (h) of minimizing releases of HFCs from equipment and maximize the amount of HFC that is available for reclaiming. EPA also considered the availability of ALD systems for refrigeration appliances in the United States. In the draft TSD titled *American Innovation and Manufacturing Act of 2020—Subsection (h): Automatic Leak Detection System* in the docket for this proposal, EPA assessed the market presence and number of manufacturers of ALD systems that sell to the U.S. market. EPA notes that most manufacturers make direct ALD systems, while indirect ALD systems are newer technologies on the market.[73] Since ALD systems have generally only been required for larger refrigeration appliances per certain state requirements, or are likely used in larger charge size refrigeration appliances to avoid potential economic burden associated with replacing refrigerant that has leaked, EPA anticipates that the current market presence of ALD system manufacturing may be generally aligned to demand for ALD systems for larger refrigeration appliances. The proposed threshold accounts for the potential for an increased demand of ALD systems, where manufacturers of such systems may not be prepared for an increased demand if EPA were to propose a lower charge size, opening the requirement for ALD systems to a larger inventory of refrigeration appliances. Taking into account existing and pending state requirements, and a likely degree of voluntary adoption of ALD systems, EPA estimates that the proposed requirement will impact approximately 50,000 appliances over the year 2025 and 6,500 per year in subsequent years. EPA has identified 10 manufacturers of ALD systems for the U.S. market. There are eight manufacturers making direct ALD systems and three manufacturers making indirect ALD systems (one manufacturer was identified to make both types of ALD systems). The majority of installed systems are likely direct ALD systems. EPA estimates that one of the largest manufacturers of direct ALD in the US makes between 6,500–7,000 direct ALD systems per year. For additional information and details on the estimated emissions reductions and costs related to ALD systems, see the draft TSD titled *Analysis of the Economic Impact and Benefits of the Proposed Rule* available in the docket for this action. EPA also notes that later in this section, we are seeking comments specifically on the proposed threshold for ALD system requirements as well as comment on the current manufacturing landscape of ALD systems.

EPA considered and is not proposing requiring ALD systems for all refrigerant-containing appliances above a certain charge size. Instead, after considering the opportunities to reduce leaks and thus minimize emissions, EPA decided to limit this proposed requirement to commercial refrigeration and IPR appliances. EPA is not proposing requirements for using ALD systems for appliances used solely for comfort cooling. The Agency understands that refrigerant-containing appliances used for comfort cooling typically do not leak to the same degree as appliances in the commercial refrigeration and IPR subsectors. Medium (charge size of 200–2,000 pounds of refrigerant) and large (charge size 2,000 pounds or greater of refrigerant) comfort cooling appliances average annual leak rates of around 10 percent, while medium and large commercial refrigeration and IPR appliances have average leak rates that are around two to three times greater.[74] This is consistent with EPA's proposed requirements for leak inspections, such that appliances used for comfort cooling would not have more frequent required inspections as a part of the leak repair provisions (see section IV.C.3.d.). EPA previously noted in the 2016 CAA 608 Rule (81 FR 82272, November 16, 2016) that larger commercial refrigeration and IPR appliances tend to have larger annual average leak rates than comfort cooling appliances. Further, larger commercial refrigeration and IPR appliances would have a greater amount of refrigerant lost compared to comfort cooling appliances even if the leaks rate were the same since these larger appliances typically have significantly larger refrigerant charge sizes. Thus, the primary benefit of early leak detection from an ALD system would not be as useful for appliances solely used for comfort cooling. However, if an appliance has a dual function (*e.g.,* IPR and comfort cooling), an ALD system would be required. For example, if the refrigerant coming off the evaporator in an industrial process were cool enough, it could be directed towards co-located offices or break rooms to provide air conditioning, before being routed back to the compressor(s). Such a system would provide both IPR and comfort cooling, and for purposes of this rule, an ALD system would be required.

ALD systems detect leaks either by a direct system that automatically detects the presence of refrigerant leaked into the air (*e.g.,* an alert is triggered at a specified concentration, typically in parts per million (ppm)) from a refrigeration system, or by an indirect system that automatically analyzes operating conditions (*e.g.,* temperature or pressure) within a refrigeration system as indicators of whether a refrigerant leak has occurred. Both types of ALD systems can help to ensure early detection of leaks and help to identify the location and severity of a leak. Thus, EPA is not proposing to prescribe whether direct or indirect ALD systems must be used, but rather is proposing that either type of system, or a combination of direct and indirect systems, would be required, and is proposing requirements that are specific to each type of ALD system. For both indirect and direct systems, EPA is proposing that the ALD system be installed on covered refrigerant-containing appliances where the components (*e.g.,* compressor, evaporator, condenser) of the refrigerant circuit are located within an enclosed building or structure (or the whole refrigerant circuit if it is entirely enclosed within a building or structure). Further, EPA is proposing where ALD systems are required for covered appliances that the systems be calibrated or audited annually as described in section IV.C.4.b.

Direct refrigerant leak detection systems are fixed hardware that directly monitor the concentration of refrigerants in the air. For direct ALD systems, it is essential that gas sensors are located at all leak-prone components of a refrigeration system; otherwise, some leaks may go undetected. The benefits of direct ALD systems include being able to pinpoint the location and severity of a leak. Direct ALD systems are commissioned to send an ''alarm'' to maintenance and/or operations staff if the programmed leak level threshold is exceeded. EPA is proposing that if an owner or operator chooses to use a direct ALD system to comply with the proposed provisions to detect refrigerant leaks in equipment, the programmed leak level threshold to alert the operator would be when a concentration of 100 ppm of vapor of the specified refrigerant is detected. EPA is also proposing that the leak detection sensors must be capable of accurately detecting a concentration level of 10 ppm of the vapor of the specified refrigerant. The leak level threshold and minimum level of detection are critical to catch leaks in

[73] EPA describes each type (*i.e.,* direct and indirect) of ALD system later in this section and in detail in the draft TSD titled *American Innovation and Manufacturing Act of 2020—Subsection (h): Automatic Leak Detection System.*

[74] Average annual leak rates by appliance type and charge size are provided in the RIA Addendum.

equipment. If the leak level threshold is set too high, the ALD system will only provide an alarm in the case of catastrophic leaks. The technical feasibility of the 100 ppm threshold is well established. This has been the threshold used by the California Air Resources Board (CARB) and is also the standard in provisions at 40 CFR 82.157(g)(4)(i) for ALD systems that are used in lieu of quarterly or annual leak inspections, as part of the leak repair requirements under CAA section 608.

EPA is proposing that if a direct ALD system detects a leak based on the 100 ppm threshold, the owner or operator would be required to either perform a leak rate calculation to determine if the leak rate threshold has been exceeded, or alternatively they may preemptively repair the leak before adding refrigerant and calculating the leak rate. In order to calculate the leak rate, refer to section IV.C.3.a. of this action. EPA is proposing that a leak rate calculation must be performed within 30 days (or 120 days where an industrial process shutdown would be necessary) of the alarm where a direct ALD system is used for required equipment. If the leak rate calculated is above the applicable leak rate, as discussed in section IV.C.3. of this preamble, all of the leak repair requirements proposed in this action (including the repair requirements, inspections, verification tests and recordkeeping and reporting) would then apply. Alternatively, if the owner or operator chooses to preemptively repair the detected leak, a leak rate calculation would be performed after the preemptive repair; however, the leak rate calculation would still be required to be performed within 30 days (or 120 days where an industrial process shutdown would be necessary) of the alarm where a direct ALD system is used for required equipment, and accordingly the preemptive repair would also need to occur in that time frame. If the leak rate calculation (performed after the addition of refrigerant pursuant to the follow-up verification test) conducted after the preemptive repair reveals that the appliance had leaked above the applicable leak threshold, the proposed suite of leak repair requirements would apply. The preemptive repair actions can be considered in determining whether the suite of leak repair requirements triggered by the exceedance of the applicable leak threshold have been satisfied, but the owner or operator of the appliance would still need to ensure that the leaks had been repaired according to the proposed definition of repair and that the other requirements proposed in 40 CFR 84.106 (*e.g.,* initial and follow-up verification tests, leak inspections (where applicable), and related recordkeeping) had been met. By allowing a leak detected by an ALD system to be preemptively repaired before the addition of refrigerant and calculation of the leak rate, EPA anticipates that this would avoid requiring owners and operators to add refrigerant to a system with a known leak, thereby saving the cost of refrigerant that might subsequently leak prior to the repair, as well as prevent unnecessary emissions of refrigerant. Additionally, preemptive repair of leaks allows owners and operators to have a ''head start'' on repairing leaks if it is later found that the applicable leak rate threshold has been exceeded when the leak rate calculation is performed.

Indirect ALD systems rely on data analytics to detect leaks rather than the direct detection of refrigerant gas. Indirect ALD systems monitor the operation of a refrigerant-based system to infer whether a leak is present. This method is typically conducted using existing sensors and hardware that are already located on site, and it relies on algorithms to evaluate existing conditions, such as liquid levels, temperatures, and ambient conditions to indicate if a leak is occurring. EPA understands that indirect systems can be calibrated to provide an alarm when a specified predicted refrigerant leak rate has occurred. EPA is proposing that if an owner or operator chooses to use an indirect ALD system to comply with the proposed provisions to detect leaks in equipment, that the system be calibrated to provide an alarm when the system has provided measurements that indicate that 50 pounds of refrigerant or 10 percent of the full charge of refrigerant, whichever is less, has leaked. At that point, as for direct ALD systems, EPA is proposing that the owner or operator would be required to perform a leak rate calculation, or alternatively they may preemptively repair the leak before adding refrigerant and calculating the leak rate. EPA is proposing that a leak rate calculation be performed within 30 days (or 120 days where an industrial process shutdown would be necessary) of the alarm where an indirect ALD system is used for required equipment. If the calculated leak rate is above the applicable leak trigger rate (as discussed in section IV.C.3. of this preamble), all of the leak repair requirements proposed in this action (including the repair requirements, inspections, verification tests and recordkeeping and reporting) would then apply.

If the owner or operator chooses to preemptively repair the detected leak, a leak rate calculation would be performed after the repair, for example when refrigerant is added to perform the follow-up verification test. The same requirements as described above for where an owner or operator chooses to do preemptive leak repair when using direct ALD system apply in the scenario where preemptive leak repair is performed when using an indirect ALD system. The leak rate calculation would still be required to be performed within 30 days (or 120 days where an industrial process shutdown would be necessary) of the alarm where an indirect ALD system is used for required equipment, and accordingly the preemptive repair would also need to occur in that time frame. If the leak rate calculation (performed after the addition of refrigerant pursuant to the follow-up verification test) conducted after the preemptive repair reveals that the appliance had leaked above the applicable leak threshold, the proposed suite of leak repair requirements would apply. The preemptive repair actions can be considered in determining whether the suite of leak repair requirements triggered by the exceedance of the applicable leak threshold have been satisfied, but the owner or operator of the appliance would still need to ensure that the leaks had been repaired according to the proposed definition of repair and that the other requirements proposed in 40 CFR 84.106 (*e.g.,* initial and follow-up verification tests, leak inspections (where applicable), and related recordkeeping) had been met.

EPA notes that a 10 percent loss in full charge does not directly correspond to the leak *rate* threshold of 20 percent for commercial refrigeration and 30 percent for IPR. The 10 percent of total *charge* lost when an indirect ALD system alarms may equate less than or greater than an annualized leak *rate* of 20 or 30 percent depending on the timeframe over which the leak occurred. See section IV.C.3.a. for more information on calculating the annualized leak rate. In any event, this difference is reasonable because the primary purpose of the ALD system is to allow the owner or operator to obtain knowledge of the leak earlier (*e.g.,* before operations are impacted) and to facilitate earlier repair, whether through preemptive repair before the leak rate threshold is exceeded or through required repairs after the leak rate threshold is exceeded.

The technical feasibility of the ''50 pounds of refrigerant or 10 percent of the full charge, whichever is less'' standard is well established. This has been the threshold used by both CARB and is also the standard in provisions at 40 CFR 82.157(g)(4)(ii) for ALD systems that are used in lieu of quarterly or annual leak inspections, as part of the leak repair requirements under CAA section 608.

EPA is requesting comment on all aspects of this proposal, and, in particular, aspects of the proposed requirements for installing and using ALD systems on refrigerant-containing appliances, as well as the proposed compliance dates. EPA is requesting comment on the types of appliances (*e.g.,* only refrigeration equipment) and the charge size cutoff for appliances (*i.e.,* 1,500 pounds) that would be required to use ALD systems. For example, should EPA consider including comfort cooling appliances in the equipment required to use ALD systems or should a lower or higher charge size cutoff be used, or should a different approach be used for determining applicability for this requirement (such as a CO_2e based approach)? EPA continues to consider options for the charge size cutoff for applying ALD system provisions, particularly, those discussed in this preamble (*e.g.,* 200, 500 pounds, 1,000 pounds, 2,000 pounds) and requests comment on these and other potential cutoffs for requiring ALD systems on refrigerant-containing appliances.

EPA is also requesting comment on the proposed alarm trigger thresholds and detection levels for both direct and indirect ALD systems. For direct ALD systems, EPA is requesting comment if it would be appropriate to lower the required alert trigger threshold to 50 ppm or to lower the concentration detection level to 5 ppm. For indirect ALD systems, EPA is seeking comment on requiring that an indirect ALD system alert at a lower measurement to detect leaks sooner (*e.g.,* 5 percent of the full charge). For either type of ALD system, EPA requests comment on whether these lower levels are technically feasible, whether they would lead to increase in false positives, and whether existing ALD systems used on refrigerant-containing appliances should be grandfathered if EPA were to lower these levels.

As noted above in this section, EPA is aware of ten manufacturers currently making ALD systems and selling them in the U.S. market. Many of these companies have been supplying those that are required by state regulations, those that chose to use ALD systems as an option under CAA section 608, and those that choose on a voluntary basis to use ALD systems. By requiring ALD systems nationally for certain types of RACHP equipment, EPA understands demand will increase in short time. Therefore, EPA requests comment and data or other supporting information on whether supply and availability of ALD systems will be available to meet the proposed compliance dates for new and existing appliances. EPA anticipates that ALD systems for new appliances would be able to comply with the January 1, 2025 date, and thus the options described are focused only on existing equipment. However, EPA requests comments on whether additional time would be needed for ALD system installations in new appliances as well. EPA considered but did not propose as its lead option to require ALD systems for existing appliances when there is a triggering event (*e.g.,* a leak rate threshold exceedance). In this option, existing appliances would not be required to install ALD systems within one year of the effective date of the final rule, but they would be required to obtain and install ALD systems within one year of a leak rate threshold exceedance (measured from the date of the refrigerant addition that triggered the leak rate calculation that revealed the exceedance). Another option EPA considered but did not propose as its lead option would be to phase in the requirement for ALD systems for existing refrigerant-containing appliances over a longer time frame, such as over the course of three years. EPA requests comment on the requirements for ALD systems including these options the Agency considered. Additional information is available in the draft TSD named *American Innovation and Manufacturing Act of 2020—Subsection (h): Automatic Leak Detection System* available in the docket for the proposed rulemaking.

b. Recordkeeping and Reporting

EPA is proposing specific reporting and recordkeeping requirements for ALD systems that would be required under this action under subsection (h). Where ALD systems are required, EPA is proposing that owners or operators maintain records regarding the annual calibration or audit of the system. EPA is also proposing to require that records be maintained each time an ALD system triggers an alert, whether that be based on the applicable ppm threshold for a direct ALD system or the indicated loss of refrigerant measured in an indirect ALD system. When an ALD system alerts of a leak, EPA is proposing that the owner or operator maintain a record of the date the ALD systems alerted to a leak and the location of the leak. The recordkeeping requirements related to when a leak rate calculation is conducted are described in section IV.C.3.g of this document. As noted in section II.B. of this document, EPA's authority to require recordkeeping and reporting under the AIM Act is also supported by section 114 of the CAA, which applies to the AIM Act and rules promulgated under it as provided in subsection (k)(1)(C) of the AIM Act.

EPA is proposing recordkeeping requirements in the case where an owner or operator chooses to use an ALD system, where not required, as a compliance option in lieu of periodic inspections for an appliance that has exceeded an applicable leak rate. EPA is proposing that owners or operators maintain records regarding the installation of the ALD system and records of the annual calibration or audit of the system. EPA is also proposing to require that records be maintained each time the ALD system triggers an alert, whether that be based on the applicable ppm threshold for a direct ALD system or the indicated loss of refrigerant measured in an indirect ALD system. EPA is proposing that the owner or operator maintain a record of the date the ALD systems alerted to a leak and the location of the leak.

EPA is proposing that these records related to ALD systems, where required, be maintained for 3 years. Where ALD systems are being voluntarily used (*i.e.,* appliances with a full charge below 1,500 pounds or using a substitute for HFCs with a GWP of 53 or below), there are no recordkeeping requirements under this proposal. However, if an appliance using an ALD system is found to be leaking above the applicable leak rate and the owner or operator chooses to use the ALD system in lieu of periodic inspections, they would be required to follow all requirements associated with this compliance option, including annual audits or calibration and all necessary recordkeeping requirements. The proposed recordkeeping requirements in this action do not change any recordkeeping requirements where an owner or operator chooses to use an ALD system per 40 CFR 82.157(g)(4) for appliances containing ODS refrigerants.

EPA requests comment on whether the Agency should require reporting of ALD system alerts to the agency. Specifically, EPA requests comment on whether owner or operators of refrigerant-containing appliances that have a full charge of 1,500 pounds should be required to file a report with

the agency within 120 days of an ALD system alert that describes the incident and follow-up leak rate calculation and/or repairs. Alternatively, EPA requests comment on an annual reporting requirement that would catalogue all ALD system alerts that occurred in a one-year period and the follow-up actions associated with those alerts. EPA is not proposing either of these reporting requirements as its lead option because the Agency believes the proposed requirements for chronically leaking appliance reports may be sufficient to accomplish the policy objectives of verifying that appropriate repairs are undertaken when a refrigerant-containing appliance has a significant history of leaks.

D. How is EPA proposing to establish requirements for the use of recovered and reclaimed HFCs?

1. Background

As described more fully in section II.B. in this proposal, subsection (h) of the AIM Act directs EPA to promulgate regulations for certain purposes identified in the statutory text, which include maximizing the reclamation of regulated substances. More specifically, subsection (h)(1) gives EPA authority to promulgate regulations to control, where appropriate, any practice, process, or activity related to the servicing, repair, disposal, or installation of equipment that involves HFCs or their substitutes, or the reclaiming of HFCs or their substitutes used as a refrigerant. With respect to reclamation, EPA interprets subsection (h) as including authority for EPA to establish regulations to control such practices, processes, or activities that are intended to increase reclamation of HFCs, as well as substitutes for HFCs that are used as refrigerants. Such regulations could include those that are designed to increase market demand for reclaimed HFCs with a goal of increasing the amount of HFCs that are reclaimed, which would further serve the purpose of maximizing the reclamation of regulated substances. Consistent with this interpretation, EPA is proposing requirements for the use of reclaimed HFCs in the installation, servicing, or repair of certain equipment. In this rulemaking, EPA is not considering establishing requirements for the use of reclaimed HFC substitutes. Substitutes for HFCs, for the purposes of this proposal, range from fluorinated chemistry (*e.g.,* HFOs), non-fluorinated chemistry (*e.g.,* hydrocarbons), and not-in-kind substitutes. In this proposed rulemaking, EPA determined it would be prudent to limit the proposed requirements to HFCs, given the consumption and production phasedown will create scarcity for virgin HFCs and such demand can partly be addressed by increased use of reclaimed HFCs where possible.

Reclamation of refrigerants has played an important role in smoothing the phase out of ODS refrigerants. The continued availability of ODS refrigerants helped ensure that equipment could continue to be used even after the phaseout date for production and consumption of various class I and class II ODS. Even today, more than 25 years after the class I phaseout, reclaimed class I ODS remain available for servicing appliances. Reclamation of HFCs already plays a nascent role in the refrigerant market and is expected to be of increasing importance as HFC production and consumption are phased down. By bolstering the current supply of HFCs with recovered and reclaimed refrigerants from existing systems, reclamation can support a smooth transition to substitutes for HFCs, minimize disruption of the current capital stock of equipment by allowing its continued use with existing refrigerant supplies, avoid supply shortages of virgin refrigerants, and can insulate the industry against price spikes that could affect the servicing of existing systems using HFCs.

EPA published a Notice of Data Availability (NODA) on October 17, 2022 (87 FR 62843) to alert stakeholders of information regarding the U.S. HFC reclamation market, available through a draft report, *Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices.*[75] EPA solicited stakeholder feedback and held a public stakeholder meeting shortly after the NODA was published on November 9, 2022.[76] EPA received comments[77] from various entities in response to the published NODA and from the stakeholder meeting held, including comments from reclaimers, industry organizations, environmental non-government organizations (ENGOs), OEMs, and a private citizen. Commenters provided input on a variety of topics. They noted the importance of tackling certain barriers to increased reclamation and availability of reclaimed HFCs on the market. Such barriers included increasing recovery of refrigerants, handling mixed refrigerants returned to reclaimers, and reclaiming certain patented blends. Commenters also provided input on consideration for a clear standard of what constitutes reclaimed HFCs, as well as improved tracking of HFCs in the supply chain. Further, some commenters noted opportunities for requiring the use of reclaimed materials in certain uses (*e.g.,* first charge of certain equipment). EPA held an additional public stakeholder meeting on March 16, 2023 and a webinar through EPA's GreenChill Partnership Program on April 12, 2023 and heard many similar comments.[78] [79] Interested parties may view the draft report, the materials for the public meetings, and the comments the Agency received in response to the NODA in the docket for this action. Further, EPA is providing an updated version of the draft report, titled *Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices,* in the docket of this action that incorporates feedback heard in the stakeholder meetings and as provided in comments to the NODA.

2. Proposed Reclamation Standard

Subsection (b)(9) of the AIM Act provides a statutory definition for ''reclaim, reclamation.'' This definition refers to the reprocessing of a recovered regulated substance to meet at least the purity described in standard AHRI 700–2016 (or an appropriate successor standard adopted by the Administrator), and that the purity of the reclaimed regulated substances must be verified using, at a minimum, the analytical method described in that standard. EPA promulgated a definition for ''reclaim'' in the Allocation Framework Rule (86 FR 55116, October 5, 2021) that is consistent with the definition provided by the AIM Act. As noted in section IV.A. of this proposal, the Agency intends to maintain consistency, except as otherwise explained in this proposal,

[75] Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices, October 2022. Available: *https://www.epa.gov/system/files/documents/2022-10/Draft_HFC-Reclamation-Report_10-13-22%20sxf%20v3.pdf.*

[76] Stakeholder meeting for input on an upcoming regulatory action under subsection (h) of the AIM Act, November 2022. Available: *https://www.epa.gov/system/files/documents/2022-11/AIM%20Act%20Stakeholder%20Meeting_HFC%20Management_11-9-2022.pdf.*

[77] Comments submitted to response of NODA published on October 17, 2022 (87 FR 62843) are available in the docket for this proposed rulemaking at *https://www.regulations.gov.*

[78] Stakeholder meeting on HFC reclamation under the AIM Act, March 2023. Available: *https://www.epa.gov/system/files/documents/2023-04/HFC%20Management_Reclaimer%20Stakeholder%20Mtg_Final%203-15-23.pdf.*

[79] Webinar—Subsection (h) Under the American Innovation and Manufacturing Act, April 2023. Available: *https://www.epa.gov/greenchill/webinar-subsection-h-under-american-innovation-and-manufacturing-act.*

and use terms in this proposal, and in the new subpart C, which is proposed to be established in this rulemaking, as they are defined in subpart A.

Subsection (h)(2)(B) of the AIM Act provides that any regulated substance used as a refrigerant that is recovered shall be reclaimed before being sold or transferred to a new owner, except where the recovered regulated substance is sold or transferred to a new owner solely for the purposes of being reclaimed or destroyed. EPA is proposing regulations to implement the statutory requirement in subsection (h)(2)(B) for stationary refrigerant-containing equipment. This would be particularly relevant to the refrigerant-containing appliances for which EPA is proposing requirements to use reclaimed HFCs in sections IV.D.3. and IV.D.4. of this proposal. More specifically, EPA is proposing to prohibit the sale, distribution, or transfer to a new owner, or the offer for sale, distribution, or transfer to a new owner, any regulated substance used as a refrigerant in stationary refrigerant-containing equipment consisting in whole or in part of recovered regulated substances. This prohibition would not apply where the recovered regulated substances are reclaimed by an EPA-certified reclaimer (as described in 40 CFR 82.164) and has been reclaimed to the required purity standard, or if the recovered regulated substance is being sold, distributed, or transferred to a new owner, or offered for sale, distribution, or transfer to a new owner solely for the purposes of being reclaimed or destroyed. These proposed provisions are intended to support the implementation of this statutory provision for stationary refrigerant-containing equipment in the context of other requirements proposed in this rulemaking, including by outlining more specific requirements for the reclamation that would need to occur before sale or any of the other listed activities for such regulated substances, as well as incorporating the statutory exception for situations where such recovered regulated substances are sold or transferred solely for the purposes of being reclaimed or destroyed. EPA further discusses its anticipated approach for recovered regulated substances used as refrigerants in MVAC equipment in section IV.H. of this preamble.

To support consistent implementation of the proposed requirements for the use of reclaimed HFCs in the installation, servicing, or repair of certain equipment, EPA is proposing a standard for the amount of virgin HFC refrigerant that can be included in any HFC or HFC blend reclaimed refrigerant. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding the installation, servicing or repair of equipment and would involve a regulated substance or the reclaiming of a regulated substance used as a refrigerant.

Typically, CAA section 608 certified reclaimers meet the required purity standards for reclaimed refrigerants by using separation technology (*e.g.,* fractional distillation), combining high purity [80] refrigerant with recovered refrigerant until the purity standard is met, or using a combination of these approaches. In some cases, sophisticated fractional distillation technology is required to purify recovered refrigerants. Combining high purity (*e.g.,* virgin) refrigerants with recovered refrigerants is an approach that some CAA section 608 certified reclaimers may use to meet the required purity standard. In that approach, virgin or otherwise high purity (*e.g.,* other reclaimed refrigerants) refrigerant is added to the recovered refrigerant, which may or may not have gone through some degree of reprocessing, until the final product meets the purity specifications to be considered reclaimed. A combination of separation technology and using virgin HFCs may be used, in which the separation technology reprocesses the refrigerant nearly to the required purity standard and high purity refrigerant is used to rebalance the refrigerant and/or fully achieve the standard.

As the HFC phasedown progresses, the overall quantity of virgin HFCs available, including to facilitate reclamation through blending or rebalancing, will decrease. In addition, the Agency considers that limiting the extent to which the purity standard for reclamation is achieved through combining with virgin refrigerant (besides what the Agency understands to be the necessary rebalancing, particularly of certain blends) will support the purposes of its proposed regulations for use of reclaimed refrigerant, including maximizing reclamation, as well as bolstering the available supply of HFCs in the market. Therefore, EPA is proposing to establish a limit on the amount, by weight of virgin HFC refrigerants, that can be contained in reclaimed HFC refrigerant. The proposed amount is no more than 15 percent virgin HFC refrigerants, by weight. As EPA understands, reclaimed HFCs may be reprocessed in a batch, from which containers, such as cylinders, may be filled and sold or distributed. In this case, EPA is not proposing to require that each individual container or cylinder be rationed out to meet the allowable limit of virgin HFCs. Rather, EPA would expect that at the batch level, the reclaimed HFCs do not exceed 15 percent, by weight, virgin HFCs. In order to support compliance with and enforcement of these proposed requirements, EPA is proposing labeling and recordkeeping requirements as well as proposing to prohibit the sale, identification, or reporting of refrigerant as being reclaimed if the HFC component of the resulting refrigerant contains more than 15 percent, by weight, of virgin HFC. Similarly, to ensure that this standard is supporting the reclamation of substances that have had bona fide use in equipment, EPA would not consider a refrigerant to be reclaimed if it contains a recovered regulated substance that has not had bona fide use in equipment, unless that recovered refrigerant was from the heel or residue of a container that had a bona fide use in the servicing, repair, or installation of refrigerant-containing equipment.

As the Agency developed this aspect of the proposal under the AIM Act subsection (h), EPA considered a number of sources of information about the approach to the use of virgin refrigerant in reclaimed refrigerant, including but not limited to the NODA (87 FR 62843, October 17, 2022) on the state of reclamation and comments received, relevant state regulations, comments made during stakeholder meetings, and a 2022 report by a group of ENGOs (Environmental Investigations Agency, the Natural Resources Defense Council, and the Institute for Governance & Sustainable Development).[81] Limiting the amount of virgin refrigerant was not included in the CAA section 608 regulations. However, consistent with sources of information noted above and in recognizing the context of the overall structure of the AIM Act phasedown, EPA assessed the current landscape of requirements for defining the composition of reclaimed HFCs as it

[80] In some cases, virgin refrigerant may be combined with less pure recovered refrigerant to achieve the required applicable purity standard; however, other higher purity refrigerants, such as previously reclaimed refrigerants could also be used to achieve the same result.

[81] Environmental Investigations Agency, the Natural Resources Defense Council, and the Institute for Governance & Sustainable Development, The 90 Million Ton Opportunity: Lifecycle Refrigerant Management (LMR), available at: *https://www.nrdc.org/sites/default/files/lrm-90-billion-ton-opportunity-report-20221020.pdf.*

relates to the amounts of virgin and recovered HFCs contained. EPA notes that the State of California currently has such a definition in its regulations. The CARB finalized a regulation, effective January 1, 2022, that defines ''certified reclaimed refrigerant'' as containing no more than 15 percent virgin refrigerant by weight and the certified reclaimer must provide supporting documentation showing as such.[82] CARB arrived at a maximum allowable amount of virgin HFCs of 15 percent by weight in ''certified reclaimed refrigerant'' based on feedback from multiple stakeholders (including reclaimers, OEMs, and industry trade groups) who commented that having an allowable amount of virgin HFCs in reclaimed HFCs would be necessary for rebalancing out-of-ratio recovered HFCs and HFC blends.[83] During a November 2022 stakeholder meeting EPA hosted and in comments submitted in response to the October 2022 NODA, several participants referred to CARB's 15 percent requirement as a workable limit for reclaimed refrigerant. The ENGO report suggests that a 15 percent requirement should be the maximin amount of virgin refrigerant the Agency should consider; however, EPA is not aware of a specific alternative proposed limit that the groups that developed this report are suggesting.

Based on the information described above from CARB and others, EPA is proposing to conclude that placing a limit on virgin HFCs in reclaimed HFC refrigerant is necessary to avoid situations where unlimited virgin HFCs could be sold as reclaimed HFC refrigerant if even a small amount of reclaimed HFCs are present. EPA notes that the limit of 15 percent virgin HFC refrigerant, by weight, in reclaimed HFCs as proposed in this action is consistent with the requirements in the State of California for what is defined as ''certified reclaimed refrigerant.'' Accordingly, EPA anticipates that regulated entities could draw on the experience of those regulated entities complying with California's limit in implementing this requirement. As part of developing this proposal, EPA considered the process which CARB underwent with industry and trade associations, both of which have a national presence, to land on this limit. Further, EPA acknowledges CARB's consideration of avoiding a scenario in which reclaimed HFCs could be sold as such, but actually contain mostly virgin HFC refrigerant with minimal amounts of recovered HFCs. Such a scenario would be inconsistent with the purpose identified in the subsection (h) of the AIM Act to maximize the reclamation of regulated substances and could cause strain on the supply of virgin HFC refrigerants available as EPA implements the provisions in the AIM Act related to phasing down the production and consumption of HFCs.

As part of the initial regulations to implement subsection (h), for specified subsectors and applications, EPA is proposing to establish requirements that specific practices, processes, or activities regarding the servicing, repair, or installation of equipment be conducted using reclaimed HFCs, meeting the proposed criteria described in this section. In particular, EPA is proposing to require that HFCs that are considered to be reclaimed must contain no more than 15 percent, by weight, of virgin HFCs. EPA recognizes that some amount of virgin HFC refrigerant may be needed to meet the required purity standard and correct blend composition for HFC blends and/or HFC and HFC substitute blends.

In the case of reclaimed refrigerant blends that contain other components that are substitutes for HFCs (*e.g.,* HFOs, hydrocarbons), EPA is proposing that only the HFC portion of the reclaimed blend is required to meet the virgin substance limit (*i.e.,* 15 percent, by weight). EPA notes that subsection (h)(1) of the AIM Act provides authority to promulgate regulations to control, where appropriate, practices, processes, or activities related to the servicing, repair, disposal, or installation of equipment that involves reclaiming of a substitute for a regulated substance used as a refrigerant. EPA interprets this provision to provide it authority which could include requiring, where appropriate, the use of reclaimed HFC substitute refrigerants in practices, processes, or activities related to the servicing, repair, disposal, or installation of equipment. However, at this time, we are not proposing a requirement on establishing a standard limiting the amount of virgin material for what is considered a reclaimed substitute for HFCs.

EPA is proposing labeling and recordkeeping requirements to support the proposed provision implementing a standard for reclaimed HFC refrigerants to contain no more than 15 percent, by weight, virgin HFCs. These requirements would help ensure that reclaimed HFCs would not exceed the limit for virgin HFCs and also help ensure that reclaimed HFCs are used for servicing, repair, and/or installation of equipment as proposed in sections IV.D.3. and IV.D.4. of this proposal. EPA is proposing that certified reclaimers would be required to affix a label to containers that are being sold or distributed or offered for sale or distribution that would certify that the reclaimed HFC refrigerant meets the proposed requirements to contain no more than 15 percent virgin HFCs. The label would further serve to inform owners or operators of refrigerant-containing equipment that the reclaimed HFCs meet the proposed requirements to be used for servicing, repair, and/or installation of equipment in the covered subsectors of this proposal (see sections IV.D.3. and IV.D.4.). EPA is proposing that certified reclaimers must affix this label to reclaimed HFCs being sold or distributed or offered for sale or distribution beginning January 1, 2026. The label would be required to follow the specifications as described in the proposed regulatory text at § 84.112.

EPA is also proposing a recordkeeping requirement related to the proposed provision to limit reclaimed HFCs to not exceed 15 percent virgin HFCs, by weight. The recordkeeping requirement would help provide certainty that the reclaimed HFCs that are in a container do not exceed the limit for virgin HFCs. EPA is proposing to require that certified reclaimers create and maintain a record related to the reclaimed HFCs that would be filled in containers. As described above, reclaimed HFCs may be reprocessed in a batch, from which containers, such as cylinders, may be filled and sold or distributed. As noted, EPA is not proposing to require that each individual container or cylinder be rationed out to meet the allowable limit of virgin HFCs. Rather, EPA would expect that at the batch level, the reclaimed HFCs do not exceed 15 percent, by weight, virgin HFCs. EPA is proposing that a certified reclaimer would be required to provide a record of certification that the reclaimed HFCs being sold in a container were sourced from a batch that met the proposed standard. Further, the record generated would be required to contain the following information: the name, address, contact person, email address, and phone number of the certified reclaimer, the date the container was filled with reclaimed HFC(s), the amount and name of the HFC(s) in the container, certification that the contents

[82] California Code of Regulations, Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses. Available: *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hfc2020/frorevised.pdf.*

[83] Final Statement of Reasons for Rulemaking, Including Summary of Comment sand Agency Response, State of California Air Resources Board, available at: *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hfc2020/fsorrevised.pdf.*

of the container are from a batch where the amount of virgin HFCs does not exceed 15 percent, by weight, of the total HFCs, the unique serial number of the container(s) filled from the batch, identification of the batch of reclaimed HFCs used to fill the container(s) and the percent, by weight, of virgin HFC(s) in the batch used to fill the container(s). EPA is proposing to require that such record would be required to be generated beginning January 1, 2026 and be maintained for three years.

EPA is seeking comment on considering whether the requirements for generating a machine-readable tracking identifier per section IV.F.3. of this proposal would satisfy these proposed labeling and recordkeeping requirements to implement the limit of 15 percent virgin HFCs, by weight, in reclaimed HFCs. For example, EPA is seeking comment on whether the data elements required for generating the machine-readable tracking identifier would be sufficient for certifying that the limit for virgin HFCs is not exceeded. EPA is also seeking comment on whether or how the information proposed to be required in the generation of a machine-readable tracking identifier would serve the purpose of ensuring that a certified reclaimer has certified that no more than 15 percent virgin HFCs, by weight were used to formulate the reclaimed HFCs, and whether or how this information would also help to inform owners and operators in the proposed RACHP subsectors who would be required to use reclaimed HFCs for the servicing, repair, and/or installation of equipment, that they are using reclaimed HFCs meeting the proposed standards. Further, EPA seeks comment on whether an additional label would be required or any current labels affixed to a container of reclaimed HFCs could be adjusted to accommodate these proposed requirements.

EPA is requesting comments on all aspects of this proposal, and in particular, aspects of setting a standard for the amount of virgin HFC refrigerant in reclaimed HFCs. EPA is seeking comment on whether to establish a lower percentage of allowable virgin HFC refrigerants, for example, EPA could allow no more than 10 percent virgin HFCs, by weight, in reclaimed HFCs that are used to meet these proposed requirements. EPA is also seeking comment on our proposal to not require a limit on the amount of virgin refrigerant used in reclaimed substitutes for HFCs. The Agency is seeking comment on the proposed recordkeeping and labeling requirements to ensure that the reclaimed HFCs do not exceed 15 percent, by weight, virgin HFCs, and which party or parties should be responsible for maintaining the record. Specifically, EPA is seeking comment on adding a label to reclaimed HFC refrigerants that would identify them as such, since it is EPA's understanding that not all reclaimed HFC refrigerants are explicitly marketed as such.

3. Proposed Requirements for Initial Charge of Equipment for Subsectors in the RACHP Sector

EPA is proposing that for certain subsectors and applications in the RACHP sector where HFCs or a blend containing HFCs are used, the initial charge of refrigerant-containing equipment must be with reclaimed HFCs starting January 1, 2028. Specifically, in the case of certain factory-charged refrigerant-containing equipment that use HFCs as the refrigerant, EPA is proposing that such equipment in the covered subsectors and applications sold or distributed, or offered for sale or distribution, for installation, or installed, in the United States would be required to have reclaimed HFCs be used for the initial charge. For certain refrigerant-containing equipment using HFCs that are initially charged in the field (*e.g.,* on-site),[84] EPA is proposing to require that reclaimed HFCs be used for the initial charge during installation of the equipment. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding the installation of equipment, and would involve a regulated substance or the reclaiming of a regulated substances used as a refrigerant.

In the case of field-charged equipment that are designed to be configured to particular application (*e.g.,* custom-built or not ''off-the-shelf'' equipment), EPA is proposing that for certain refrigerant-containing equipment (*e.g.,* retail food refrigeration supermarket system) a new installation would be considered to have occurred if the overall cooling capacity is increased or the entire refrigeration loop is replaced (compressor, condenser, evaporator, etc.). For example, EPA understands that in some situations components may be added to current systems, such as if the cooling demand of a particular system increases (*e.g.,* expansion of a supermarket). In other cases, components may be added to a system without changing the overall cooling capacity or replacing the refrigeration loop. In these cases, EPA is not proposing to consider this a new installation and the use of reclaimed HFCs would not be required unless the equipment had already been required to use reclaimed HFCs for its original installation. Under the proposed requirements, where equipment was already required to have been charged with reclaimed HFCs when installed, reclaimed HFCs must continue to be used even if a component is added to a system but the cooling capacity is unchanged or the refrigerant loop is not replaced. Proposed requirements for servicing or repair of certain equipment with reclaimed HFCs would apply in the event that refrigerant needs to be removed or other servicing or repair is required. Section IV.D.4 of this proposal describes what EPA is proposing for the use of reclaimed HFCs for the servicing and/or repair of certain refrigerant-containing equipment.

As explained in this section, EPA is proposing requirements for using reclaimed HFCs as the initial charge in certain refrigerant-containing equipment that will be sold or distributed or offered for sale or distribution for installation or installed in the United States in certain RACHP subsectors and applications. EPA is proposing to delay the compliance date for the requirements for using reclaimed HFCs as the initial charge in certain equipment until January 1, 2028.

On January 1, 2029, under the HFC phasedown schedule prescribed by Congress in subsection (e)(2)(C) of the AIM Act, the HFC production and consumption caps decrease by 70% as compared to historic baseline levels. While EPA anticipates that many equipment manufacturers will transition to substitutes for HFCs, reclaimed HFCs are anticipated to fill a vital role in supplying industry with usable HFCs for new and existing equipment. The experience with the phaseout of class I and class II ODS suggests that reclamation will be an important option for smoothing the phasedown. However, given the AIM Act calls for a phasedown of HFCs and not a phaseout, there also likely could be a continuing dependency on HFCs, at least for certain sectors and subsectors, indefinitely. Therefore, experience with similar chemicals and considering how markets may respond to a phasedown, were among the factors EPA considered when

[84] Field-charging of equipment occurs when of a piece of equipment shipped to the location in which it will be installed. Equipment may also be field-charged when the overall system is not a single piece of equipment, but rather is a collection of components installed to meet a particular configuration (*e.g.,* installation of a supermarket system).

developing the proposed requirements for requiring use of reclaimed HFCs.

EPA is aware that industry and, in particular, reclaimers may need time to adjust business practices and build capacity to reclaim HFCs to support this upcoming demand for reclaimed HFCs as well as make other changes. EPA publishes annual data on the trends of reclaimed refrigerants.[85] These data for reclaimed HFCs begin in 2017, when the CAA section 608 requirements for reporting reclamation of HFCs began. Reclamation of HFC refrigerants have been generally steady since 2017 through 2021; however, HFC reclamation had a sizeable increase of approximately 38 percent in 2022 compared to 2021. EPA recognizes that these data mostly represent years ahead of when HFC production and consumption was capped, but the observed increase in reported HFC reclamation in 2022 shows an important step to making reclaimed HFCs more available on the market. Continued increases in the current levels of HFC reclamation will be necessary to meet the anticipated demand of HFCs in the subsectors for which EPA is proposing requirements for the use of reclaimed HFCs. EPA also recognizes the significant steps in the HFC phasedown that will occur in 2024 and 2029, and equipment using HFCs will generally rely on reclaimed HFCs, further adding to the demand of reclaimed HFCs. Proposing requirements for the use of reclaimed HFCs beginning in 2028 will give reclaimers and industry time to adjust business practices (*e.g.,* changing suppliers) and build capacity, while allowing industry to have sufficient reclaimed HFCs ahead of the significant phasedown step which will reduce the amount of virgin HFCs that are available to meet demand for HFCs. Reclaimers who may need to build additional capacity would need this additional time to develop the necessary infrastructure to reclaim sufficient HFCs.

The report by a group of ENGOs [86] states that a requirement for new equipment to use reclaimed HFCs would further help mitigate the climate impact of sectors that are transitioning away from very-high-GWP substances to mid-GWP substances as part of the HFC phasedown. The report states that a requirement to use reclaimed refrigerant instead of virgin refrigerants in specific subsectors ''would go a long way towards building a market for reclaimed refrigerant and avoiding unnecessary emissions of virgin HFCs.'' Specifically, it advocates for requirements to use of reclaimed refrigerant for initial charge and provides examples of subsectors to be covered for initial factory-charged equipment. Such examples include air conditioning and heat pumps where refrigerants such as HFC–32 and R–454B are among the likely candidates replace R–410A. The authors of the report note that it has been uncommon to use reclaimed refrigerant in new factory-charged equipment. However, they state that the use of reclaimed refrigerant in new air conditioners and heat pumps has been successfully executed on a voluntary basis in Europe.[87]

EPA is proposing that all refrigerant-containing equipment (*i.e.,* 100 percent) in the identified subsectors in this section use reclaimed HFCs for their initial charge. EPA is also considering requiring a certain percentage of some or all refrigerant-containing equipment in the subsectors identified in this aspect of the proposal be met with reclaimed HFCs for their initial charge. There may be certain advantages to such an approach including if availability of specific HFCs or HFC blends are not available in sufficient quantity to meet demand. However, complying with a percentage-based requirement could be challenging. Such an approach could also require additional recordkeeping or reporting requirements. If EPA were to use a percentage-based approach, in other words requiring for example 25, 50, or 75 percent of the affected equipment be charged with reclaimed refrigerant, EPA anticipates that for factory-charged equipment, the recordkeeping and reporting requirements would be for the manufacturers while for field-charged equipment the requirements would be for the owners and operators. By proposing to require that all refrigerant-containing equipment in the affected subsectors have reclaimed HFCs used in their initial charge, additional recordkeeping requirements would be avoided since OEMs and owners or operators could just purchase reclaimed HFCs rather than keep track of the amount of reclaimed and virgin HFCs they purchase for the initial charge of their equipment throughout the year, as would be necessary if only a portion of the affected equipment were required to be charged with reclaimed refrigerant. EPA also understands that a variant on type of percentage-based approach is used in California in a limited manner. EPA understands that California requires those that manufacture certain equipment (*e.g.,* certain air-conditioning appliances) must purchase a certain amount of reclaimed refrigerant. However, California does not specify where or how the reclaimed refrigerants are used.

Subsectors in the RACHP Sector

EPA is proposing to require use of reclaimed HFCs in initial charges for new refrigerant-containing equipment the following subsectors that will be installed in the United States:

- Residential and light commercial AC and heat pumps;
- Cold storage warehouses;
- Industrial process refrigeration;
- Stand-alone retail food refrigeration;
- Supermarket systems;
- Refrigerated transport; and
- Automatic commercial ice makers.[88]

The types of equipment that are in these subsectors may vary by when the initial charge of the refrigerant is added to the equipment. Some types of equipment in a given subsector may be charged with the refrigerant before the equipment is sold or distributed (*i.e.,* factory-charged), while others within the same subsector or in a different subsector may have the refrigerant charged in the field (*i.e.,* field-charged). For example, self-contained equipment (*e.g.,* window air conditioning units) in the residential and light commercial air conditioning and heat pumps subsector are charged with refrigerant at the factory and sold with the refrigerant in the equipment before it is installed for its intended use. Larger pieces of equipment in the IPR or supermarket systems subsectors, for example, have the refrigerant charged in field. These larger pieces of equipment may be custom-built to meet the specific needs of the application in which they are used, and the refrigerant is charged during the installation of the equipment. Additional detail on the types of

[85] U.S. EPA, Summary of Refrigerant Reclamation Trends, available: *https://www.epa.gov/section608/summary-refrigerant-reclamation-trends.*

[86] Environmental Investigations Agency, the Natural Resources Defense Council, and the Institute for Governance & Sustainable Development, The 90 Million Ton Opportunity: Lifecycle Refrigerant Management (LMR), available at: *https://www.nrdc.org/sites/default/files/lrm-90-billion-ton-opportunity-report-20221020.pdf.*

[87] Daikin Reclaimed Refrigerant Initiative in partnership with A-Gas, available at: *https://www.chillaire.co.uk/reclaimed-refrigerant-initiative/.*

[88] EPA has proposed to restrict the use of certain higher-GWP HFCs in these seven subsectors through a rulemaking under subsection (i) of the AIM Act. (87 FR 76738, December 15, 2022). Although EPA has not yet made final decisions regarding these subsectors, such restrictions on higher-GWP HFCs could affect the use of such HFCs for initial charge in these subsectors by 2028, even if these HFCs were reclaimed prior to the initial charge.

equipment and the applications in which they are used in the listed subsectors is provided in the proposed Technology Transitions Rule (87 FR 76738, December 15, 2022). Although EPA has not yet issued a final Technology Transitions rule, we also anticipate considering, where appropriate, any further information provided on these types of equipment, applications, and subsectors in any final Technology Transitions rule as we are developing this rulemaking under subsection (h) of the AIM Act, in an effort to promote consistency where appropriate.

EPA understands that, in practice, reclaimed HFCs meet the same purity standards as their virgin counterparts and function the same when used in equipment in the RACHP sector and other sectors. Comments in response to EPA's NODA (87 FR 62843, October 17, 2022) and in stakeholder meetings hosted by the Agency noted that there are not significant barriers to using reclaimed HFCs in the initial charge of equipment. Thus, EPA's proposal to require the use of reclaimed HFCs regarding the installation of new equipment in the listed subsectors would not have any significant technical limitations. EPA is aware that the near-term capacity of reclaimed HFCs may not be sufficient to meet the total demand of HFCs in all new equipment across the whole RACHP sector and thus is proposing a subset of subsectors to be required to use reclaimed HFCs in the initial charge for the installation of new equipment. As described later in this section, the Agency also is seeking comment on requiring a percent of equipment in the subsector use reclaimed refrigerants rather than all equipment in that subsector given EPA understands that there could be other factors, such as introduction of new and/or patented refrigerants, that could affect the decision on the use of reclaimed refrigerants. For example, EPA could require manufacturers use reclaimed HFCs in 25, 50, or 75 percent of their total product lines for the covered product categories. The Agency describes later in this section in more detail and in the *Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices,*[89] the anticipated demand of HFCs for new refrigerant-containing equipment in these subsectors that would need to be met with reclaimed HFCs, and notes that the proposed compliance date for these proposed requirements would not be until 2028. The proposed compliance date provides industry a transition period to facilitate necessary changes in the current business practices and to allow for the HFC reclamation market to grow. Further, based on the restrictions in the proposed Technology Transition rule (87 FR 76738, December 15, 2022), industry should have a good sense of what HFCs and blends containing HFCs would be being used in new equipment.

EPA is proposing requirements for the initial charge with reclaimed HFCs in equipment in these seven subsectors within the RACHP sector based on the Agency's assessment of available reclaimed HFCs available to meet anticipated demand and that these are uses for which reclaimed refrigerants are appropriate to use. For example, EPA understands for certain subsectors, particularly those outside the RACHP sector, such as for certain medical devices (*e.g.,* metered-dose inhalers), reclaimed HFCs would not be meet the specific quality and purification requirements. In its outreach, EPA asked about any significant challenges or barriers to using reclaimed HFCs as the initial charge of refrigerant in equipment. The Agency received comments in support of requiring reclaimed HFCs as the initial charge for equipment in response to the October 2022 NODA and did not learn of any technical barriers.[90]

Reclaimed HFCs are purified and tested to verify they meet the levels as specified in appendix A to 40 CFR part 82, subpart F (which is based on AHRI 700–2016), as consistent with the definition of reclaim in 40 CFR part 84, subpart A. The Allocation Framework Rule (86 FR 55116, October 5, 2021) also requires that virgin HFC refrigerants meet this same standard. Therefore, their purity is indistinguishable. By requiring the use of reclaimed HFCs in these seven subsectors, EPA is providing opportunities to smooth transition to using reclaimed HFCs in new equipment that would be installed.

EPA estimated the demand for initial charge of HFCs for equipment in the applicable subsectors in 2028 that would be required to be fulfilled with reclaimed HFCs per this proposal. EPA estimates that the total amount of reclaimed HFCs that would be required to meet demand for the initial charge of refrigerant-containing equipment in the covered subsectors would be approximately 23,300 metric tons, which is equivalent to 31.0 $MMTCO_2e$ in 2028. The subsector with the greatest amount of reclaimed HFCs needed to meet demand for the initial charge of equipment is the residential and light commercial subsector, at approximately 18,600 metric tons (18.6 $MMTCO_2e$) of reclaimed HFCs that would be required in 2028. Additional information on the demand of HFCs for the initial charge of refrigerant-containing equipment in the covered subsectors can be found in the *Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices* in the docket for this rulemaking.

EPA is requesting comment on all aspects of this rule. With regard to the proposed requirements for using reclaimed HFCs in the initial charge of certain refrigerant-containing equipment, EPA is requesting comment on whether the requirement to use reclaimed HFCs in the initial charge of certain equipment should exclude certain HFCs or HFC blends because there are barriers to establishing the requisite availability of reclaimed refrigerants by the proposed January 1, 2028, compliance date. Such barriers could potentially include niche HFCs or HFC blends that are not manufactured or reclaimed at significant volumes but are key to certain subsectors, HFCs or HFC blends that were recently commercialized such that the amount of used material is not yet sufficient to provide the input to a supply of reclaim material, or certain refrigerants that may be subject to specific types of patents. EPA is also interested in comments regarding the proposed list of covered subsectors that would be required to use reclaimed HFCs in the initial charge of new equipment, and if EPA should consider any additional subsectors or fewer subsectors. As discussed in section IV.D.3., EPA noted that the Agency considered a percentage-based approach for the reclaim requirements for initial charge. EPA is requesting comment on this percentage-based approach where requirements for using reclaimed HFCs for initial charge of equipment in the covered subsectors could be phased in over time compared to the proposed requirement to solely use reclaimed HFCs in the initial charge of certain equipment. In other words, EPA could require, for example, 25, 50 or 75 percent of a subsector use reclaim for initial charge indefinitely, or as an alternative example, that 25 percent do so in 2026, 50 percent in 2027, 75

[89] EPA, 2023. Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices. Available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov.*

[90] Comments submitted to response of NODA published on October 17, 2022 (87 FR 62843) are available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov.*

percent in 2028, and 100 percent in 2029. EPA also requests comment on the proposed compliance date of January 1, 2028 in general, for use of reclaimed HFCs in the initial charge of new equipment in applicable RACHP subsectors. EPA is interested in whether reclaimers anticipate being able to meet the demand in 2028.

4. Proposed Requirements for Servicing and/or Repair of Existing Equipment in Subsectors in the RACHP Sector

EPA is proposing that the servicing and/or repair of refrigerant-containing appliances in certain subsectors and applications in the RACHP sector where HFCs (whether neat or in a blend) are being used be done with reclaimed HFCs starting January 1, 2028. As noted in section IV.D.3, these requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act. The proposed requirements discussed in this section of the preamble would control practices, processes, and activities regarding the servicing and/or repair of equipment and involve HFCs and the reclaiming of HFCs used as a refrigerant by requiring that such servicing and/or repair be done with reclaimed HFCs. Existing equipment that is currently using HFCs or a blend containing HFCs is anticipated to continue to need these substances as the phasedown of the production and consumption of HFCs under other provisions of the AIM Act progresses, such as for servicing needs. As virgin HFC refrigerants become increasingly scarce, we expect industry will rely on using reclaimed HFCs to meet their needs for servicing existing equipment. EPA is proposing requirements that reclaimed HFCs be used to service and/or repair equipment within certain RACHP subsectors and applications.

As noted in the prior section on reclaim requirements for initial charge of equipment in certain RACHP subsectors, EPA is considering many types of information in developing the proposed requirements for reclaimed HFC refrigerants in the servicing and/or repair of equipment in certain RACHP subsectors. For example, EPA is drawing on the past data and history of the reclamation of ODS, as explained in section IV.D.3. EPA is also considering the experience in California and the EU. EPA also reflected on information submitted in response to the October 2022 NODA and the recent report by a group of ENGOs referred to previously. EPA is aware that as more reclaimed HFCs are used, either as required per the proposed provision or otherwise used as virgin HFCs become scarcer, market prices for reclaimed HFCs may shift. Lastly, EPA considered the anticipated effect of the overall phasedown of the production and consumption of HFCs and the vital role that reclaimed HFCs will likely play to meet the continuing need for using HFCs as refrigerants in the United States. EPA is requesting comment on these considerations and any other considerations or information that would be relevant to the proposed provisions for using reclaimed HFCs in the servicing/repair of refrigerant-containing equipment.

EPA is aware that industry, and, in particular, reclaimers will need time to adjust and build capacity to reclaim HFCs to support this upcoming demand for reclaimed HFCs. EPA is proposing a compliance date of January 1, 2028, for the required use of reclaimed HFCs in the servicing and/or repair of equipment in certain RACHP subsectors. As explained in section IV.D.3. of this proposal, requiring compliance with these requirements as of January 1, 2028, would allow industry to transition to meet the increased demand for reclaimed HFCs and make changes to their current practices prior to the significant reduction in the production and consumption of HFCs in 2029.

Subsectors in the RACHP Sector

EPA is proposing to require, for the servicing and/or repair of refrigerant-containing equipment in the following subsectors, that reclaimed HFCs be used:

- Stand-alone retail food refrigeration;
- Supermarket systems;
- Refrigerated transport; and
- Automatic commercial ice makers.

As noted in section IV.D.3., EPA understands that reclaimed HFCs function the same as virgin HFCs in refrigerant-containing equipment and are required to meet the same purity levels as their virgin counterparts, as specified in appendix A to 40 CFR part 82, subpart F (which is based on AHRI 700–2016) and consistent with the definition of reclaim in 40 CFR part 82, subpart A. In particular in the RACHP sector, it may already be a practice for refrigerant-containing equipment to be serviced or repaired with reclaimed HFCs. Owners or operators or the technicians they contract may be using reclaimed HFCs during these practices, processes, or activities related to servicing and/or repair without specifically seeking to use reclaimed HFC refrigerants. In general, reclaimers do not specifically label their reclaimed HFC products when they sell or distribute them directly to technicians or a wholesaler or distributor; however, EPA is aware of at least one reclaimer that already markets a specific product line of reclaimed refrigerants.[91] In most cases, EPA understands that owners or operators or technicians may be purchasing refrigerant for servicing and/or repair that is most cost-effective, which may involve purchasing reclaimed refrigerants.

EPA is aware that the current capacity of reclaimed HFCs may not be sufficient to meet the total demand of HFCs for practices, processes, or activities related to the servicing and/or repair of refrigerant-containing equipment across the whole RACHP sector and is proposing a subset of subsectors to be required to use reclaim in the servicing and/or repair of equipment. The Agency describes later in this section and in the *Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices* in the docket for this rulemaking in more detail the anticipated demand of HFCs for servicing and/or repair of refrigerant-containing equipment in these subsectors that would need to be met with reclaimed HFCs, and notes that the compliance date for these proposed requirements is not proposed to occur until January 1, 2028. This compliance date would provide industry a transition period to have enough reclaimed HFCs available to meet the demand for servicing and/or repair of equipment.

EPA is proposing requirements for the use of reclaimed HFCs in the servicing and/or repair of equipment in four subsectors within the RACHP sector. EPA acknowledges the needed increase in the amount of HFCs available for the servicing and/or repair of equipment in these subsectors, and notes that these proposed requirements further serve one of the purposes identified in subsection (h), to maximize the reclaiming of regulated substances. Reclaimed HFCs are purified and tested to the levels as specified in appendix A to 40 CFR part 82, subpart F (which is based on AHRI 700–2016), as consistent with the definition of reclaim in 40 CFR part 82, subpart A and could be required to be used in other subsectors as well. These four subsectors in the RACHP sector provide opportunities for transitioning to using reclaimed HFCs in the servicing and/or repair of refrigerant-containing equipment as the phasedown of production and consumption virgin HFCs progresses under the AIM Act. These subsectors are expected to

[91] Hudson Technologies, Emerald Refrigerants. More information available at: *https://www.hudsontech.com/refrigerants/emerald-refrigerants/.*

continue to use HFCs in the current existing equipment and are likely to continue to have a steady demand for the HFCs in servicing and/or repair of the equipment. Thus, these subsectors are appropriate for proposing that the anticipated demand for servicing and/or repair of equipment be met with reclaimed HFC refrigerant. As noted above, there are likely already cases in which reclaimed HFC refrigerants are being used to service and/or repair equipment in these subsectors.

EPA estimated the demand for servicing and/or repair with HFCs for refrigerant-containing equipment in the applicable subsectors in 2028 that would be required to be fulfilled with reclaimed HFCs per this proposal.

EPA estimates that the total amount of reclaimed HFCs that would be required to meet the demand for the servicing and/or repair of refrigerant-containing equipment in the covered subsectors would be approximately 16,700 metric tons, which is equivalent to 46.8 $MMTCO_2e$ in 2028. The subsector with the greatest amount of reclaimed HFCs needed to meet demand for servicing and/or repair of equipment is supermarket systems, at approximately 12,900 metric tons (33.6 $MMTCO_2e$) of reclaimed HFCs that would be required in 2028. Additional information on the demand of HFCs for the servicing and/or repair of refrigerant-containing equipment in the covered subsectors can be found in the *Updated Draft Report—Analysis of the U.S. Hydrofluorocarbon Reclamation Market: Stakeholders, Drivers, and Practices* in the docket for this rulemaking.

EPA is requesting comment on all aspects of this proposal. Regarding the proposed requirements for using reclaimed HFCs in the servicing and/or repair of certain refrigerant-containing equipment, EPA is requesting comment on whether the requirement to use reclaimed HFCs in the servicing and/or repair of certain equipment should exclude certain HFCs or HFC blends because there are barriers to establishing the requisite availability of reclaimed refrigerants by the proposed January 1, 2028, compliance date. Such barriers could potentially include niche HFCs or HFC blends that are not manufactured or reclaimed at significant volumes but are key to certain subsectors, HFCs or HFC blends that were recently commercialized such that the amount of used material is not yet sufficient to provide the input to a supply of reclaim material, or certain refrigerants that may be subject to specific types of patents.

EPA requests comment on other ways to structure the requirements to use reclaimed refrigerant in certain subsectors. EPA requests comment on whether the Agency should use a percentage-based approach and/or phase the requirements in by requiring a percentage of the HFCs or HFC blends used in the servicing and/or repair of refrigerant-containing equipment be reclaimed HFCs, and then increasing that percentage over time. In other words, EPA could require, for example, 25, 50 or 75 percent of a subsector use reclaim for servicing and/or repair indefinitely, or as an alternative example, that 25 percent do so in 2026, 50 percent in 2027, 75 percent in 2028, and 100 percent in 2029. Although this an option that the Agency is considering for the final rule, EPA is not proposing that as the lead option because the Agency has potential concerns, which are similar to those described in section IV.D.3. Particularly, as related to servicing and/or repair of equipment, the Agency has potential concerns about the recordkeeping and/or reporting requirements necessary to track and verify compliance with a percentage-based approach in relation to the policy goals of the provision. By proposing to require that all refrigerant-containing equipment in the affected subsector be serviced and/or repaired with reclaimed HFCs, additional recordkeeping requirements would be avoided since owners or operator could just purchase reclaimed HFCs rather than keep track of the amount of reclaimed and virgin HFCs they purchase to service their equipment throughout the year, as would be necessary if only a portion of the affected equipment were required to be serviced and/or repaired with reclaimed refrigerant. EPA requests comment on what recordkeeping and/or reporting would be necessary to verify compliance with a percentage-based option and which entities would ultimately be responsible for that recordkeeping and/or reporting. EPA also requests comment on the proposed compliance date of January 1, 2028 in general, for use of reclaimed HFCs in the servicing and/or repair of equipment in applicable RACHP subsectors. EPA is interested in whether reclaimers anticipate being able to meet the demand in 2028.

E. How is EPA proposing to establish an HFC emissions reduction program for the fire suppression sector?

1. Background

As described in greater detail in section IV.B., HFCs and substitutes for HFCs are used in many different sectors, subsectors, and applications beyond those in the RACHP sector, and EPA interprets its authority under subsection (h) to include promulgating regulations that control the types of practices, processes, or activities identified in subsection (h)(1) in those sectors, subsectors, and applications, with the limitation that we do not interpret our regulatory authority under subsection (h) to extend to HFCs or substitutes for HFCs when they are contained in foams. For example, HFCs are also used in the fire suppression sector.

EPA understands that different sectors use HFCs and their substitutes differently, and as such, the timing for emissions and mechanisms by which emissions occur can vary greatly across sectors. HFCs used in the fire suppression sector are used as a fire suppressant and should only be discharged from fire suppression equipment in the event of a fire. If there is no event to cause the fire suppression equipment to be used, the HFCs should not be discharged, and thus not emitted. EPA considered these differences as well as the types of equipment used for fire suppression in developing this proposed rule. EPA is proposing certain requirements to address HFC management for fire suppression under subsection (h).

The Agency is not proposing any regulatory requirements under subsection (h) for HFC and HFC substitutes used in sectors, subsectors, and applications besides the RACHP and fire suppression sectors at this time. However, the Agency will continue to monitor the use and emissions of HFCs more generally and such information may inform future rulemakings under subsection (h).

2. Nomenclature Used in This Section

This section uses the term ''recycled'' or ''recycling'' to describe the testing and/or reprocessing of HFCs used in the fire suppression sector to certain purity standards.[92] HFCs that are recycled for fire suppression use include HFC–227ea, HFC–125, HFC–236fa, and HFC–23. The term ''recycled'' or ''recycling'' as used in the fire suppression sector is similar, but not identical, to the term ''reclaim'' as defined under the AIM Act. Under the AIM Act, the terms ''reclaim; reclamation'' are defined in subsection (b)(9) of the Act, and that definition refers to the purity standards under AHRI Standard 700–2016 (or an

[92] These industry standards may include NFPA 2001 (Standard on Clean Agent Fire Extinguishing Systems), NFPA 10 (Standard for Portable Fire Extinguishers), ASTM D6064–11 (Standard Specification for HFC–227ea), ASTM D6231/D6231M–21 (Standard Specification for HFC–125), ASTM D6541–21 (Standard Specification for HFC–236fa), and ASTM D6126/D6126M–21 (Standard Specification for HFC–23).

appropriate successor standard adopted by the Administrator) and the verification of purity using, at a minimum, the analytical methodology described in that standard.

The fire suppression industry describes clean agents as ''a gaseous fire suppressant that is electrically nonconducting and that does not leave a residue upon evaporation,'' and the term ''clean agents'' includes HFCs, according to the National Fire Protection Association (NFPA).[93] For the purposes of this section, EPA is generally referring to the term, ''clean agents'' as HFCs.

3. Fire Suppression Background

As part of implementing subsection (h)(1), EPA is proposing certain regulatory requirements regarding the servicing, repair, disposal, or installation of fire suppression equipment that contains HFCs, with the purpose of minimizing the release of HFCs from that equipment, as well as requirements related to technician training for servicing, repair, disposal, or installation in the fire suppression sector. These proposed requirements are similar to the halon emissions reduction requirements found at 40 CFR part 82, subpart H. EPA regulations under Title VI of the CAA prohibit the intentional release of halons during testing, maintenance, servicing, repair, or disposal of halon-containing equipment, or during the use of such equipment for technician training (subject to certain exceptions). EPA's halon emission reduction requirements at 40 CFR part 82, subpart H cover technician training requirements and proper halon disposal and recycling.[94] These regulations also prohibit halon releases that occur because an owner failed to maintain halon-containing equipment to relevant industry standards. With the production and import of virgin halons phased out in the United States since 1994, recycled halons have been the primary supply of halons in the United States for nearly 30 years. Sources of recycled halons include recovered halons from cylinders collected from decommissioned systems both in the United States and abroad. Existing halon stocks are purchased by commercial recyclers from decommissioned equipment, reprocessed to industry specifications, and sold back into the market. Demand for halons has been satisfied with recycled halons, ensuring equipment can be serviced and investments are not stranded.

Recycled halon is still available today, nearly 30 years after the United States phased out production and consumption of halons. It is this experience since the phaseout of the halons in 1994 that demonstrates the important role recovery and recycling of fire suppression clean agents can play by providing an ongoing supply of HFCs in fire suppression applications especially where other substitutes may not be suitable. EPA understands that this model has carried over on a voluntary basis to the management of HFCs by many in the fire suppression sector.[95] In 2002, the fire suppression industry developed a voluntary code of practice (VCOP) for the reduction of emissions of fire suppression agents including HFCs. The VCOP was developed by the Halon Alternatives Research Corporation (HARC), an industry organization, in partnership with EPA, the Fire Suppression Systems Association (FSSA), the Fire Equipment Manufacturers Association (FEMA), and the National Association of Fire Equipment Distributors (NAFED). Many of the practices have been voluntarily adopted by the fire suppression sector, such as equipment manufacturers or distributors.

Fire suppression agents must satisfy important environmental and safety criteria, including but not limited to acceptable ODPs, GWPs, and atmospheric lifetimes, be effective extinguishants, and, for spaces where people would be present, have sufficiently low toxicity that under normal use the discharge of agent in occupied spaces would not harm people.[96] Other important preferred features include being electrically non-conductive, and ''clean,'' meaning leaving no non-volatile residue that could damage high-value electronics, controls, or other critical systems in the protected spaces. HFCs that satisfy the above requirements are used in fixed systems for total-flooding applications and for use in portable equipment as streaming agents. These applications are generally described as follows:

- Total flooding systems are designed to automatically discharge a fire suppression agent by detection and related controls (or manually by a system operator) and achieve a specified minimum agent concentration throughout a confined space (*i.e.,* volume percent of the agent in air) that is sufficient to suppress development of a fire.
- Streaming applications use portable fire extinguishers that can be manually manipulated to discharge an agent in a specific direction and release a specific quantity of extinguishing agent at the fire.

Guidelines for clean agents, including HFCs, have been published to ensure the quality of the recycled fire suppression agents. According to HARC's comment on the October 2022 NODA, fire suppression agent recyclers follow industry standards and specifications that are generally similar to section 608 and AHRI purity specifications. In 2016, HARC developed a voluntary recycling code of practice (RCOP).[97] This code of practice includes the recommendation that prior to sale or reuse as a fire suppressant, the recovered HFC should be tested and processed to meet NFPA 2001[98] and NFPA 10[99] standards or American Society for Testing and Materials (ASTM) specifications. These specifications ensure that fire suppressants, including HFCs, are recycled and tested to a certain purity level, before being sold or reused as a fire suppressant. In addition, in 2018, the Montreal Protocol's Technology and Economic Assessment Panel's (TEAP) Halons Technical Options Committee (HTOC) (renamed in 2022 to the Fire Suppression Technical Options Committee or FSTOC) published recommended practices for recycling halons and other gaseous fire extinguishing agents, including certain HFCs, which covers similar specifications for testing and certification of the recycled agent prior to reuse.[100]

[93] National Fire Protection Association, NFPA Today, May 6, 2022, *https://www.nfpa.org/News-and-Research/Publications-and-media/Blogs-Landing-Page/NFPA-Today/Blog-Posts/2022/05/06/Clean-Agent-System-Basics.*

[94] These regulations were established in 1998 (63 FR 11096, March 5, 1998) and amended in 2020 (85 FR 15301, Mar. 17, 2020).

[95] EPA, 2023. American Innovation and Manufacturing Act of 2020—Subsection (h): Fire Suppression Sector. Draft Technical Support Document. Available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov.*

[96] UNEP, ''TEAP 2022 Assessment: Report of the Fire Suppression Technical Options Committee,'' December 2022, available at: *https://ozone.unep.org/system/files/documents/FSTOC-2022-Assessment.pdf.*

[97] HARC, ''Code of Practice for Use of Recycled Halogenated Clean Agents,'' 2016, available at: *https://www.harc.org/_files/ugd/4e7dd1_4ab7295ac47e4bdea67020750f544f1b.pdf.*

[98] NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems. Available at: *https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=2001.*

[99] NFPA 10 Standard for Portable Fire Extinguishers. Available at: *https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=10.*

[100] Technical Note #4, Revision 2—Recommended Practices for Recycling Halons and

A recent report by the TEAP's FSTOC states that ''the HFC phasedown in the US is having a large effect on the production and consumption of HFC fire extinguishants,'' noting that ''what we have seen in the US is that there has already been significant impact on cost of HFCs.'' [101] FSTOC states that the reasons for this include that HFCs used for fire extinguishing are high-GWP, that the allocation mechanism in the United States is GWP-weighted, and that market commercial factors will mean producers and importers will decide which HFCs to manufacture or import based on GWP and future market needs. The reasons for this include the extremely small use of HFCs in fire suppression compared to other uses. Additional impacts to the fire suppression sector from the global phasedown of HFCs ''could reduce the commercial viability of production of some HFC fire extinguishing agents in the future.'' FSTOC notes that ''HFCs contained in fire protection equipment have historically enjoyed a relatively high level of recycling and reuse'' and ''[as] the supply of newly produced HFCs for fire protection decreases in response to phase down regulations, recycling becomes even more important as an alternative source of supply and is likely to increase in the future.''

4. Minimizing Releases of HFCs

As part of implementing subsection (h)(1), EPA is proposing a number of requirements to minimize releases of HFCs during the servicing, repair, disposal, or installation of fire suppression equipment containing HFCs or during the use of such equipment for technician training. As previously discussed, EPA is proposing requirements that are similar to the halon emissions reduction requirements found at 40 CFR part 82, subpart H. The fact that recycled halons have been the only supply of halons in the United States nearly 30 years after its production phaseout in 1994 demonstrates the important role recovery and recycling of fire suppression clean agents can play by providing an ongoing supply where substitutes may not be suitable. EPA understands that this model has carried over on a voluntary basis to the management of HFCs by many in the fire suppression sector.

To minimize releases of HFCs, EPA is proposing that covered entities installing, servicing, repairing, or disposing of fire suppression equipment containing a regulated substance may not release into the environment any HFCs used in such equipment. EPA is also proposing that owners and operators of fire suppression equipment containing HFCs may not allow for the release of HFCs as a result of failure to maintain such equipment. In the following sections, EPA describes its proposal to require the use of recycled HFCs for initial charge and servicing and/or repair of fire suppression equipment as well as minimizing HFC releases during recycling; technician training; recycling of HFCs prior to the disposal of fire suppression equipment containing HFCs; and recordkeeping and reporting. These requirements are proposed with a compliance date of January 1, 2025.

Recognizing the extensive requirements for testing (*e.g.,* Federal Aviation Administration, United States Coast Guard, Department of Defense) associated with the approval for use of fire suppressants in certain applications, certain limited HFC releases for health, safety, environmental, and other considerations would be exempted, including:

- Releases during the testing of fire suppression equipment only if the following four criteria are met: (1) equipment employing suitable alternative fire suppression agents are not available, (2) release of fire suppression agent is essential to demonstrate equipment functionality, (3) failure of the equipment would pose great risk to human safety or the environment, and (4) a simulant agent cannot be used in place of the regulated substance for testing purposes.
- Releases associated with qualification and development testing during the design and development of equipment containing regulated substances only when (1) such tests are essential to demonstrate equipment functionality, and (2) a suitable simulant agent cannot be used in place of the regulated substance for testing purposes.

In addition, these proposed requirements to minimize HFC releases do not apply to emergency releases of HFCs for actual fire extinguishing, explosion inertion, or other emergency applications for which the equipment were designed.

EPA requests comment on the proposed compliance date of January 1, 2025, for the proposed requirements in the fire suppression sector. As discussed elsewhere in this section of the proposed rule, many covered entities may already have procedures in place given the voluntary program within the fire suppression sector as described previously. EPA views this proposed compliance date as appropriate.

a. Proposed Requirements for Initial Charge of Equipment for Fire Suppression

EPA is proposing that for the fire suppression sector where HFCs are used, the initial charge of fire suppression equipment, including both total flooding systems and streaming applications, must be with recycled HFCs starting January 1, 2025. EPA is also considering other potential compliance dates, such as January 1, 2026 or January 1, 2027. Specifically, for factory-charged equipment that use HFCs, EPA is proposing that in order to install such equipment, the equipment would be required to use recycled HFCs for the initial charge during the manufacture of the equipment. These requirements would apply whether the HFCs are used neat or in a blend. However, EPA notes that most often, where clean agents are needed and HFCs are being used, these are single component HFCs with some of the highest GWPs for the regulated HFCs. Given the high GWPs for the commonly used HFC fire suppression agents, this aspect of the proposal is anticipated to further minimize emissions by requiring that only recycled HFCs be used in fire suppression equipment.

EPA understands that, in practice, recycled HFCs are required to meet applicable purity standards and function the same as their virgin counterparts when used in equipment in the fire suppression sector. Currently, recycled HFCs are primarily used for the servicing and recharge of existing fire suppression equipment. However, HARC's comments on the October 2022 NODA indicate that it does not anticipate major barriers to using recycled HFCs in new fire suppression equipment and expects use of recycled HFCs in new equipment to increase as the supply of virgin HFCs for fire suppression decreases.

EPA notes that the proposed definition of ''fire suppression equipment'' for purposes of subsection (h) excludes mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles. Finalizing the proposed definition would exempt those applications from this requirement, which is consistent with EPA's intent to not include these

Other Halogenated Gaseous Fire Extinguishing Agents. Available at: *https://ozone.unep.org/sites/default/files/Assessment_Panel/Assessment_Panels/TEAP/Reports/HTOC/technical_note4_2018.pdf.*

[101] UNEP, ''TEAP 2022 Assessment: Report of the Fire Suppression Technical Options Committee,'' December 2022, available at: *https://ozone.unep.org/system/files/documents/FSTOC-2022-Assessment.pdf.*

applications under the proposed requirements to use recycled HFCs in the installation, servicing and/or repair of such fire suppression equipment. This proposed exclusion is based on EPA's understanding that there are situations in which the unique design and use of such military equipment and space vehicles make it impossible to recover fire suppression agent during the service, repair, disposal, or installation of the equipment.

Recognizing that application-specific HFC allowances are available to other onboard aerospace fire suppression applications under regulations at 40 CFR 84.13,[102] EPA is not proposing to extend a requirement to use recycled HFCs in the installation, servicing and/or repair of such fire suppression equipment as long as they qualify for application-specific allowances in 40 CFR 84.13. Because these other onboard aerospace fire suppression applications would have the necessary allowances for virgin HFCs through qualification for application-specific allowances, these applications would not need to use recycled fire suppressants containing HFCs for the installation, servicing, and/or repair of fire suppression equipment.

EPA is requesting comment regarding the proposed requirement for using recycled HFCs in the initial charge of fire suppression equipment. EPA is requesting comment on the proposed requirement to solely use recycled HFCs in the initial charge of fire suppression equipment or if EPA should consider an approach that either uses a percentage-based approach for the affected fire suppression equipment charged with recycled HFCs (*e.g.,* 25, 50, or 75 percent of the fire suppression equipment) or phases in the requirement for using recycled HFCs over a period of time. As noted in section IV.D.3., if EPA were to finalize a percentage-based and/or phased in approach, associated recordkeeping and reporting may be required to ensure compliance with such an approach. EPA is also requesting comment on whether recycled HFCs should be used for the initial charge during the installation of fire suppression equipment as EPA understands that HFCs are generally not transferred from cylinders once in service. EPA also requests comment on the proposed compliance date of January 1, 2025, and other potential compliance dates such as January 1, 2026, or January 1, 2027, for the use of recycled HFCs in the initial charge of fire suppression equipment.

b. Proposed Requirements for Servicing and/or Repair of Existing Equipment for Fire Suppression

EPA is proposing to require the use of recycled HFCs for the servicing and/or repair of fire suppression equipment, including both total flooding systems and streaming applications, starting on January 1, 2025. EPA is also considering other potential compliance dates, such as January 1, 2026, or January 1, 2027. EPA understands that the fire suppression industry operates in accordance with requirements from NFPA 2001 or NFPA 10 or appropriate ASTM standards to recover and recycle HFCs during servicing and/or repair of fire suppression equipment. NFPA 2001 is a voluntary industry standard containing the minimum requirements for the design, installation, approval, and maintenance of total flooding systems using listed clean agents including HFCs. It includes requirements for inspection, servicing, testing, maintenance, and training to ensure the safe use and operation of these systems. Similarly, NFPA 10 is a voluntary industry standard containing the minimum requirements that apply to the selection, installation, inspection, maintenance, recharging, and testing of portable fire extinguishers and fire suppression agents including HFCs. The ASTM specifications cover the requirements (*e.g.,* purity) for the fire suppression agents, in this case the HFCs; the specifications do not typically address the associated fire suppression equipment or hardware that use the fire suppression agent or the conditions of using such equipment (*e.g.,* fixed total flooding systems, portable fire extinguishers). None of these current industry standards or specifications related to HFCs used in fire suppression contain specific requirements to minimize releases of HFCs, including during servicing or repair of the equipment. Efforts by the industry to minimize emissions of HFCs used in the fire suppression sector have to date been on a voluntary basis. For example, the VCOP includes as part of its emission reduction strategies during storage, handling, and transfer of HFCs to recover and recycle agents during servicing and to adopt maintenance practices that reduce leakage as much as is technically feasible. Considering these current voluntary practices to minimize emissions, the proposed requirements would minimize emissions of HFCs broadly within this sector of use. Covered entities are required to evacuate, as applicable, all equipment used to recover, store, and transfer HFCs prior to each use to prevent contamination, arrange for destruction of the recovered HFCs as necessary (*e.g.,* recovered HFCs that are too contaminated to be recycled), and collect and dispose of wastes from recycling process. If the recycling of HFCs is not practical, the disposal of HFCs would help to prevent releases of used HFCs into the atmosphere.

In 2015, data on recycling of HFC fire suppression agents were collected as part of the HFC Emissions Estimating Program (HEEP), which is voluntary data collection effort implemented by the fire suppression industry. HEEP collects data on sales of fire suppression agents for recharge in order to estimate annual emissions of HFCs. These data showed that the HFC–227ea, HFC–125, HFC–236fa and HFC–23 are all recycled for fire suppression use.[103] In recent years, approximately 75 percent of HFCs sold for recharge came from recyclers, with 80 percent reported in 2020, based on data submitted voluntarily to HEEP and may not include all entities in this sector.[104]

As part of servicing and/or repairing fire suppression equipment, recovery and recycling equipment is used to recover HFCs. EPA is also proposing to require that covered entities must (1) operate and maintain recovery and recycling equipment in accordance with manufacturer specifications to ensure that the equipment performs as specified; (2) repair leaks in HFC storage, recovery, recycling, or charging equipment before use; and (3) ensure that cross-contamination does not occur through the mixing of HFCs that may be contained in similar cylinders. Recovery equipment collect HFCs from equipment and recycling equipment remove contaminants from HFCs and this equipment is used during servicing and/or repair. By ensuring that this equipment is functioning properly, HFC releases can be minimized during the recovery and recycling process. The proposed requirements would ensure that releases from fire suppression equipment are minimized when

[102] On board aerospace fire suppression means use of a regulated substance in fire suppression equipment used on board commercial and general aviation aircraft, including commercial-derivative aircraft for military use; rotorcraft; and space vehicles. Mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles, are applications that sometimes use HFCs and are therefore currently eligible for application-specific allowances.

[103] HARC comments on Notice of Data Availability Relevant to Management of Regulated Substances under the American Innovation and Manufacturing Act of 2020 are available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov*.

[104] HARC Report of the HFC Emissions Estimating Program (HEEP) 2002–2020 Data Collection, October 2022.

recycling HFCs during servicing and/or repairing fire suppression equipment.

EPA notes that the proposed definition of ''fire suppression equipment'' for purposes of subsection (h) excludes mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles. Finalizing the proposed definition would exempt those applications from this requirement, which is consistent with EPA's intent to not include these applications under the proposed requirements to use recycled HFCs in the installation, servicing and/or repair of such fire suppression equipment. This proposed exclusion is based on EPA's understanding that there are situations in which the unique design and use of such military equipment and space vehicles make it impossible to recover fire suppression agents during the service, repair, disposal, or installation of the equipment.

Recognizing that application-specific HFC allowances are available to other onboard aerospace fire suppression applications under regulations at 40 CFR 84.13,[105] EPA is not proposing to extend a requirement to use recycled HFCs in the installation, servicing and/or repair of such fire suppression equipment as long as they qualify for application-specific allowances in 40 CFR 84.13. Because these other onboard aerospace fire suppression applications would have the necessary allowances for virgin HFCs through qualification for application-specific allowances, these applications would not need to use recycled fire suppressants containing HFCs for the installation, servicing, and/or repair of fire suppression equipment.

EPA is requesting comment regarding the proposed requirements for using recycled HFCs in the servicing and/or repair of fire suppression equipment. In particular, EPA requests comments on the applicable fire suppression equipment that would be required to use recycled HFCs in the servicing and/or repair of fire suppression equipment. EPA is also requesting comment on the proposed requirement to solely use recycled HFCs in the servicing and/or repair of fire suppression equipment or if EPA should consider an approach that phases in requirements for using recycled HFCs. In addition, EPA requests comments on the practices to minimize releases from HFC recycling during servicing and/or repair as well as whether covered entities should be required to follow industry standards including NFPA 2001 (Standard on Clean Agent Fire Extinguishing Systems), NFPA 10 (Standard for Portable Fire Extinguishers), ASTM D6064–11 (Standard Specification for HFC–227ea), ASTM D6231/D6231M–21 (Standard Specification for HFC–125), ASTM D6541–21 (Standard Specification for HFC–236fa), and ASTM D6126/D6126M–21 (Standard Specification for HFC–23). EPA also requests comment on the proposed compliance date of January 1, 2025, and other potential compliance dates, such as January 1, 2026, or January 1, 2027, for the use of recycled HFCs for the servicing and/or repair of fire suppression equipment.

c. Technician Training

EPA is proposing to require all entities that employ fire suppression technicians who service, repair, install, or dispose of fire suppression equipment containing HFCs provide training regarding HFC emissions reduction. This proposed requirement is intended to control practices, processes, or activities regarding servicing, repair, disposal or installation of such fire suppression equipment by providing technicians with knowledge and skills to minimize releases of HFCs during such practices, processes, or activities, and the proposed requirements would involve a regulated substance. Fire suppression technicians are an important part in any effort to control unnecessary HFC emissions from fire suppression equipment while servicing, repairing, installing, or disposing of such equipment. By training technicians in the significance of minimizing unnecessary HFC releases from fire suppression equipment and providing information on applicable procedures such as the recovery and recycling or reclamation of HFCs from the fire suppression equipment, technician training would support EPA's effort to reduce HFC emissions from fire suppression equipment.

EPA is proposing that HFC fire suppression technician training be designed to cover: (1) an explanation of the purpose of the training requirement, including the significance of minimizing releases of HFCs and ensuring technician safety, (2) an overview of HFCs and environmental concerns with HFCs, (3) a review of relevant regulations concerning HFCs,[106] including the requirements of the HFC emissions reduction program for fire suppression equipment, and (4) specific technical instruction relevant to avoiding unnecessary HFC emissions during the servicing, repair, disposal or installation of fire-suppression equipment at each individual facility. Starting as of January 1, 2025, EPA is proposing that all entities that employ technicians who maintain, service, repair, install, or dispose of fire suppression equipment containing HFCs must provide HFC fire suppression technician training to their technicians (as described in this section) and ensure that their technicians complete this training. Technicians hired after that date must be similarly trained within 30 days of hiring, or by June 1, 2025. EPA is proposing this as a one-time training requirement. EPA is requesting comment on the requirement for technicians to be trained, the proposed content as described above, and timing of this requirement for technician training.

d. Recycling of HFCs Prior to Disposal of Fire Suppression Equipment Containing HFCs

EPA is proposing requirements related to the disposal of fire suppression equipment. The intent of these requirements is to ensure that HFCs have been recovered and recycled from the equipment prior to the final step of the disposal of the equipment so that HFCs are not released during the disposal of the equipment. EPA is proposing to require owners and operators of fire suppression equipment containing HFCs (including an HFC blend) dispose of this equipment by recovering the HFCs themselves or by arranging for HFC recovery by a fire suppression equipment manufacturer, distributor, or a fire suppressant recycler. EPA is also proposing that owners and operators dispose of HFCs used as a fire suppression agent by sending it for recycling to a fire suppressant recycler or a reclaimer certified under 40 CFR 82.164 or by arranging for its destruction using one of the controlled processes listed in 40 CFR 84.29. The voluntary industry standards that apply to the uses of HFCs in fire suppression equipment, NFPA 2001 for fire suppression systems and NFPA 10 for fire extinguishers, contain no current requirement for the recovery

[105] On board aerospace fire suppression means use of a regulated substance in fire suppression equipment used on board commercial and general aviation aircraft, including commercial-derivative aircraft for military use; rotorcraft; and space vehicles. Mission-critical military end uses and systems used in deployable and expeditionary applications, as well as space vehicles, are applications that sometimes use HFCs and are therefore currently eligible for application-specific allowances.

[106] These may include, but are not limited to, other EPA regulations, U.S. Department of Transportation (DOT) regulations, Occupational Safety and Health Administration (OSHA) regulations, codes and standards of NFPA, and other federal, state, or local fire, building, safety, and environmental codes and standards.

and disposal of HFCs prior to disposal of equipment. Efforts by the industry to minimize emissions of HFCs used in the fire suppression sector have to date been on a voluntary basis. For example, the VCOP includes as part of its emission reduction strategies during storage, handling, and transfer of HFCs to recover the agents after the end of the equipment's useful life and either recycle or destroy them. The proposed requirements would minimize emissions of HFCs through recovery of the agent prior to disposal of the equipment and ensure recycling or proper disposal of the HFC occurs broadly within this sector of use. Under the proposed requirements, the owners and operators of this equipment (*e.g.,* specialized fire suppression systems containing HFCs that protect high value equipment, such as electronic server rooms or oil and gas production facilities) must ensure that these HFCs are recovered from the fire suppression equipment before it is sent for disposal, either by recovering the HFCs themselves before sending the equipment for disposal or by leaving the HFCs in the equipment and sending it for disposal to a facility (*e.g.,* fire suppression equipment manufacturer, a distributor, or a fire suppressant recycler) operating in accordance with industry standards, *i.e.,* NFPA 10 and NFPA 2001 standards, as applicable. The proposal also would require that owner or operators of fire suppression equipment recover any HFCs as part of the disposal of such equipment be disposed of by sending it to a fire suppressant recycler operating in accordance with the relevant industry standards, which EPA understands to be the NFPA 10 and NFPA 2001 standards (depending on the type of equipment), by sending it to a reclaimer certified under 40 CFR 82.164, or by arranging for its destruction by a technology that is listed as an approved technology for destruction of the relevant regulated substance in the regulations at 40 CFR 84.29. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as they would control practices, processes, or activities regarding the disposal of such fire-suppression equipment by establishing certain requirements that must be met as part of the disposal process and would involve a regulated substance.

Owners and operators of this fire suppression equipment who recover HFCs prior to disposal may already be aware of the importance of HFC recycling given prior communication efforts by the industry and may already take steps to ensure recovery of HFCs prior to disposal. As mentioned in section IV.E.3., the recycling of HFCs plays an important role in providing the fire suppression sector with continued supply of HFCs for fire suppression equipment during servicing. Industry trade organizations have encouraged owners and operators of fire suppression equipment and those disposing of HFCs to contact fire suppression equipment manufacturers, distributors, or fire suppressant recyclers to ensure that HFC is safely recovered from equipment and recycled for future use. Therefore, the proposed requirements are likely consistent with current industry practices. Most fire suppression systems and extinguishers in use today are purchased, installed, and serviced by fire suppression equipment distributors. EPA is aware that there are established distribution channels within the commercial and industrial sectors where these specialized systems are used and that industry representatives indicate that the simplest way in their opinion to ensure proper recycling of HFCs is to encourage equipment owners return equipment containing HFCs to distributors.[107] EPA values using established industry practices where such practices exist and can be used to meet the intended goals. EPA is requesting comment on the requirement to recover and recycle HFCs prior to the final step of disposal of the fire suppression equipment.

e. Recordkeeping and Reporting

EPA is proposing to include recordkeeping and reporting requirements on the fire suppression provisions under subsection (h) for HFCs used in the installation of new equipment and servicing and/or repair of existing equipment. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding servicing, repair, disposal or installation of fire suppression equipment, and would involve a regulated substance. For example, the requirements would control recordkeeping and reporting practices, process, or activities for servicing and repair that involves HFCs. As noted in section II.B. of this document, EPA's authority to require recordkeeping and reporting under the AIM Act is also supported by section 114 of the CAA, which applies to the AIM Act and rules promulgated under it as provided in subsection (k)(1)(C) of the AIM Act.

EPA is proposing that covered entities in the fire suppression sector provide data on HFCs to the Agency. The fire suppression industry is familiar with data collection and reporting as some of the entities in this industry are voluntarily reporting data to HEEP as mentioned in section IV.E.4.b. Relevant reporting entities covered under this requirement include entities that perform first fill of equipment, service (*e.g.,* recharge) equipment and/or recycle regulated substances, such as equipment manufacturers, distributors, agent suppliers or installers that recycle regulated substances. EPA is proposing that these records related to the fire suppression sector be maintained for three years. Specifically, EPA is proposing that the covered entities report annually by February 14th of each year, covering the prior year's activity from January 1 through December 31:

- The quantity of material (the combined mass of regulated substance and contaminants) by regulated substance broken out by sold, recovered, recycled, and virgin for the purpose of installation of new equipment and servicing of fire suppression equipment,
- The total mass of each regulated substance broken out by sold, recovered, recycled, and virgin; and
- The total mass of waste products sent for disposal, along with information about the disposal facility if waste is not processed by the reporting entity.

EPA acknowledges that these recordkeeping and reporting requirements proposed herein may overlap with recordkeeping and reporting requirements under 40 CFR part 84, subpart A. EPA is requesting comments on these recordkeeping and reporting requirements, the timing of recordkeeping and reporting requirements (*e.g.,* whether it should be five years similar to recordkeeping requirements under 40 CFR part 84, subpart A), and whether compliance with one set of requirements would satisfy both obligations.

EPA is proposing that covered entities maintain an electronic or paper copy of the fire suppression technician training as discussed in IV.E.4.c., and that EPA can request to view a copy of the training on an as needed basis. EPA is also proposing that facilities must document that they have provided training to personnel. For example, local personnel records could be annotated, indicating where and when the training

[107] HARC comments, dated November 7, 2022, to Notice of Data Availability Relevant to Management of Regulated Substances Under the American Innovation and Manufacturing Act of 2020 are available in the docket (EPA–HQ–OAR–2022–0606) for this rulemaking at *https://www.regulations.gov.*

occurred. Alternatively, records could be centralized. Where EPA is proposing requirements for recordkeeping, we are proposing that the record be maintained for three years in either electronic or paper format.

As discussed in IV.E.4.d., EPA is proposing that covered entities maintain records documenting that HFCs are recovered from the fire suppression equipment before it is sent for disposal, either by recovering the HFCs themselves before sending the equipment for disposal or by leaving the HFCs in the equipment and sending it for disposal to a facility (*e.g.,* fire suppression equipment manufacturer, distributor, or a fire suppressant recycler). Such records must be maintained for three years.

EPA is requesting comment on the proposed recordkeeping requirements for fire suppression entities. The proposed recordkeeping requirements in this action do not change any recordkeeping and reporting requirements for fire suppressant recycling per 40 CFR 84.31(j) and EPA is not reopening, taking comment on, or revisiting those requirements through this proposal.

F. What is EPA proposing for cylinder requirements and for container tracking requirements?

1. Background

As described in more detail earlier in this action, subsection (h) directs EPA to establish certain regulations regarding the servicing, repair, disposal, or installation of equipment for certain purposes. More specifically, for purposes of maximizing reclaiming and minimizing the release of a regulated substance [108] from equipment and ensuring the safety of technicians and consumers, subsection (h)(1) of the AIM Act gives EPA authority to promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves a regulated substance or its substitute or the reclaiming of a regulated substance or its substitute used as a refrigerant. Thus, EPA is proposing certain cylinder requirements and certain container tracking requirements for regulated substances as part of implementing subsection (h), as a means of controlling a practice, process, or activity regarding the servicing, repair, and installation of equipment to further serve the statutory purpose identified in subsection (h) of maximizing reclamation of HFCs, as well as providing additional HFC emission reductions.

HFCs are transported and distributed throughout the United States to a range of users, including but not limited to blenders, repackagers, distributors, wholesalers, and equipment manufacturers, as well as users engaged in the installation, service, repair, and disposal of equipment. For example, containers are used to transport HFCs to worksites for servicing, repairing, disposing, or installing equipment containing HFCs. HFCs are transported, bought, and sold in different sizes and types of containers as they move through the supply chain. These containers range from small cans with 16 ounces or less of HFCs to tank trailers, International Organization for Standardization (ISO) tanks, and tank railcars. From the larger containers, HFCs are often transferred to smaller containers (a process referred to as ''downpacking''), which include other types of refillable cylinders and disposable cylinders.

EPA provided information on the movement of HFCs used as refrigerants in the supply chain as they relate to reclamation in the draft report accompanying the NODA published on October 17, 2022 (87 FR 62843), and the Agency provides additional information in the updated report in the docket for this proposed rule. In comments submitted for the NODA and in public stakeholder meetings that the Agency hosted,[109] EPA received feedback noting that one key challenge to increasing reclamation is ensuring that HFCs are recovered and transferred to reclaimers. Accordingly, EPA views the proposed container tracking requirements in this action as measures that could ''increase opportunities for the reclaiming of regulated substances used as refrigerants,'' and thus EPA's consideration of the use of its authority under subsection (h) of the AIM Act to establish these tracking measures is consistent with subsection (h)(2)(A). Additionally, specifically tracking the movement in the market of reclaimed HFCs would have the added benefit of supporting compliance with the requirements described in this proposal for using reclaimed HFCs for initial charging and servicing of certain equipment as well as providing information that the reclaimed HFCs contain no more than 15 percent virgin material (see section IV.D.2.).

As discussed in greater detail below, EPA is proposing to require machine readable tracking identifiers (*e.g.,* QR code,[110] or another identifier(s)) on all containers of HFCs (*i.e.,* containers that contain an HFC, whether neat or in a blend), that could be used for the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment, including both refillable and disposable cylinders. EPA is proposing staggered compliance dates, ranging from January 1, 2025, to January 1, 2027, for this requirement that would apply to various entities involved in the transport of HFCs across the supply chain. EPA is also proposing certain requirements for tracking the movement of containers that contain HFCs and that have been used in the servicing, repair, or installation of equipment as they are sent to an entity capable of recovering any remaining HFCs.

After cylinders are used and considered empty, there is still an amount of HFCs remaining in the cylinders, referred to as the ''heel.'' HFC releases of heels are far more likely to occur from disposable cylinders than from other types of cylinders, and those amounts of HFCs released are not available for reclamation. Refillable cylinders are typically evacuated and recharged, thus continuing to be used to transit HFCs whereas disposable cylinders are typically sold for scrap or landfilled. To recover the remaining HFCs, including the heel, recovery equipment can be used to pull a vacuum on the cylinder. Section IV.F.2. provides additional detail on typical quantities of the heel that would remain in a cylinder. Recovering heels from disposable cylinders would increase the amount of HFCs available for reclamation. Therefore, for disposable cylinders, EPA is proposing to require as of January 1, 2025, that disposable cylinders that contain HFCs and that have been used for the servicing, repair, or installation of certain equipment must be transported to an EPA-certified reclaimer or a fire suppressant recycler. Further, EPA is proposing that reclaimers or fire-suppressant recyclers who receive these disposable cylinders would be required to remove the

[108] As noted previously in this action, ''regulated substance'' and ''HFC'' are used interchangeably in this action.

[109] Comments submitted to response of NODA published on October 17, 2022 (87 FR 62843), can be found in the docket for this action. Additionally, EPA heard feedback from participants in the public meetings it hosted on November 9, 2022, and March 16, 2023, as well as solicited feedback through a webinar for the EPA GreenChill Partnership program on April 12, 2023.

[110] A QR code is a type of matrix barcode that contains data for a locator, identifier, or tracker that points to a website or application using standardized encoding modes to store data. It is recognizable as black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera.

remaining HFCs, including the heel, prior to disposing of these cylinders.

EPA also notes that it established certain requirements for QR codes and use of refillable cylinders in the Allocation Framework Rule. Those requirements were subject to judicial review in the D.C. Circuit, and the court concluded that ''EPA has not identified a statute authorizing its QR-code and refillable-cylinder regulations'' and therefore vacated those parts of the rule and remanded to the EPA. *Heating, Air Conditioning & Refrigeration Distributors Int'l* v. *EPA,* 71 F.4th 59, 68 (D.C. Cir. 2023) (''*HARDI* v. *EPA*'').[111] The court's opinion concluded that subsection (e)(2)(B) of the AIM Act, the statutory provision the Agency had cited as authorizing those parts of the rule, did not provide the authority to support them. However, that conclusion rested on limitations on the scope of the EPA's authority under subsection (e)(2)(B) in particular, and it does not apply to other parts of the AIM Act. In fact, the court's opinion highlights the authority that EPA has under other statutory provisions, including its ''power to pass rules regulating 'practice[s], process[es], or activit[ies]' for 'servicing, repair[ing], dispos[ing of], or install[ing]' '' equipment, citing subsection (h)(1). *Id.* at 67. The cylinder requirements and tracking requirements proposed in this action are distinct from those that were established in the Allocation Framework Rule (86 FR 55116, October 5, 2021), as they are being proposed under a different statutory provision, subsection (h)(1) of the AIM Act, and are tailored to that subsection. As described in greater detail below, these requirements would regulate ''practice[s], process[es], or activit[ies] regarding the servicing, repair, disposal, or installation of equipment that involves regulated substances'' and thus are within the authority provided by subsection (h)(1).[112]

In the interest of clarity, EPA notes that it is not at this time proposing a prohibition on the use of disposable cylinders like the prohibition in the Allocation Framework Rule that was at issue in *HARDI* v. *EPA.* Rather, EPA is proposing here certain practices, processes, or activities related to the use of disposable cylinders in the servicing, repair, disposal, or installation of equipment that involves a regulated substance as discussed below.

2. Requirements for Disposable Cylinders

EPA is proposing certain requirements for users of disposable cylinders that contain HFCs that could be used in the servicing, repair, or installation of certain equipment. As described in more detail earlier in this action, subsection (h)(1) directs EPA to promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves regulated substances, among other things, for purposes of maximizing reclaiming and minimizing the release of a regulated substance from equipment and ensuring the safety of technicians and consumers. Both disposable and refillable cylinders are used during the service or repair of equipment, and both could be used during the installation of a piece of equipment that is initially charged in the field. For the purpose of maximizing the reclamation of HFCs, EPA is proposing to require that disposable cylinders that contain HFCs and that have been used for the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must be sent to an EPA-certified reclaimer or a fire suppressant recycler. EPA is also proposing that these entities (*i.e.,* reclaimers and fire suppressant recyclers) must remove all HFCs, including any remaining amount after the cylinders are considered empty for servicing, repair, and installation purposes (*e.g.,* the heel), prior to the disposal of these cylinders. The proposed requirements to send disposable cylinders and the removal of the remaining HFCs will contribute to EPA's efforts to maximize reclaiming by ensuring that any remaining HFCs (including heels) have been evacuated and recovered, and thus are available for reclamation, rather than being released over time when disposable cylinders are placed in landfills or are crushed for scrap metal recycling. EPA interprets its authority under subsection (h)(1) of the AIM Act to ''promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment'' to include authority to regulate the entire practice, process, or activity, including aspects of it that may occur before or after the servicing, repair, disposal, or installation of the equipment, especially where such regulations help achieve the purposes specified in subsection (h)(1) (*e.g.,* ''maximizing reclamation''). Thus, because use of these cylinders in servicing, repair, and installation of equipment is a practice, process, or activity regarding the servicing, repair, and installation of equipment, EPA interprets section (h)(1) to convey authority to establish the proposed requirements for the treatment of the cylinder after servicing, repair, or installation. Requiring that disposable cylinders be sent to entities able to remove the HFCs would have the effect of increasing the amount of HFCs that could be reclaimed and reused in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. In addition, the result of these proposed requirements would be fewer HFC emissions, as compared to allowing such single use, disposable cylinders to be disposed with HFCs still in the cylinder.

Compressed gases, such as HFCs, can be stored and transported in a variety of containers, which often hold as little as sixteen ounces (or even smaller for lab samples) or as much as a ton (or even more in the case of railcars and ISO tanks). The size and type of the container depend in large part on the intended use of the regulated substance. Historically, HFC refrigerant [113] sold in the United States for technicians servicing existing RACHP equipment has been predominantly contained in disposable cylinders certified to Department of Transportation (DOT) specifications. These cylinders are often called DOT–39 cylinders because the cylinders are certified to meet DOT specification 39 requirements.[114] A DOT–39 cylinder is designed for a single use and is strictly not refillable. As such, a DOT–39 cylinder tends to be less expensive and weigh less than refillable refrigerant cylinders. Disposable cylinders of the same capacity [115] typically have the same shape and are also often shipped in a box while refillable cylinders are typically not. Refillable refrigerant

[111] The court rejected the other challenges to the Allocation Framework Rule in this litigation. *Heating, Air Conditioning & Refrigeration Distributors Int'l* v. *EPA,* 71 F.4th 59, 61 (D.C. Cir. 2023).

[112] EPA further notes that in proposing separate cylinder recovery requirements and tracking requirements in this action, EPA is not proposing to change, reopen, or revisit any of the requirements related to use of refillable cylinders or certification and tracking requirements established in the Allocation Framework Rule; rather EPA expects to address the court's decision in *HARDI* v. *EPA* in a separate action.

[113] EPA understands that HFC fire suppressants are less likely to be found in disposable cylinders; however, in case they are, EPA is treating them the same as HFC refrigerants in disposable cylinders in this proposal.

[114] See 49 CFR 178.65—Specification 39 non-reusable (non-refillable) cylinders.

[115] Typically, disposable cylinders of the same designed water capacity have the same shape. For example, disposable cylinders with a ~30-pound water capacity will generally have the same shape; however, disposable cylinders with a ~16-pound water capacity would be smaller in size and shape.

cylinders are also used to a lesser extent and considered to be more durable, lasting up to 20 years. The two primary shapes of refillable refrigerant cylinders currently being used in servicing, repair, and/or installation are akin to a propane tank or a cylindrical scuba tank and have a two-way valve that can be adjusted to allow pressurized gases in or out.

HFC losses are more likely to occur, and in more significant quantities, from disposable cylinders, including losses from the residual amount of HFCs (*i.e.,* heels) that remain in cylinders after the majority of the HFC has been removed from the cylinder for use. With disposable cylinders, these heels, which can measure up to 10 percent of the quantity that was originally stored in the container, would be released to the atmosphere when the cylinder is disposed of, unless the heel was recovered prior to disposal. In addition, disposable cylinders may be disposed with greater amounts of HFCs than a typical heel in the cylinder particularly if the technician has limited space to carry partially full cylinders. This differs from a refillable cylinder, since such cylinders can be refilled whereas the design of disposable cylinders inherently means they cannot be refilled. In the *Analysis of the Economic Impacts and Benefits of the Proposed Rule* draft TSD developed to support this proposed rule, EPA considered a typical range for the heel remaining in disposable service cylinders of 2 to 6 percent while noting information that suggests heels can be as high as 10 percent. This range is consistent with previous theoretical and empirical studies, as referenced in the draft TSD, that have estimated the remaining heel in disposable 30-pound cylinders to usually range between 2 to 6 percent, though this percent could vary depending on the application in which the cylinder is used as well as the refrigerant contained in the cylinder. As also reflected in the draft TSD, industry estimates that disposable cylinders contain a heel that is typically between 1 (~3 percent) to 1.5 pounds (5 percent). The lead assumption used by EPA to assess the impacts of this proposal was to assume the heels are approximately 1.25 pounds (~4 percent) for a typical disposable cylinder of 25–30 pounds.

EPA is concerned about the reduction in the amounts of HFC that could be available for reclaiming due to losses of HFCs associated with current practices of disposing single use, disposable cylinders used in the servicing, repair, or installation of refrigerant-containing or fire suppression equipment. Accordingly, proposing to require that HFCs contained in disposable cylinders must be recovered prior to the disposal of cylinders will reduce HFC losses from disposable cylinders. EPA is also aware that as the HFC phasedown continues, scarcity of virgin HFCs will increase. HFCs recovered and reclaimed (or recycled, in the case of recovered fire suppressants) can be used for servicing, repair, disposal, or installation of equipment thus providing additional options for increasing the amounts of usable HFCs.

EPA is proposing a compliance date of January 1, 2025, for requiring that disposable cylinders be sent to a reclaimer or fire suppressant recycler and for the recovery of HFCs from disposable cylinders, in part because EPA understands that a viable distribution chain for sending HFCs in containers to reclaimers or fire suppressant recyclers already exists. This current distribution chain is currently in place for refillable cylinders and cylinders that are exclusively used for the recovery of HFCs from equipment, referred to as recovery cylinders. This distribution chain could just as effectively be used for sending disposable cylinders containing remaining HFCs to reclaimers or fire suppressant recyclers, and to some extent, already is in use for disposable cylinders. Several reclaimers indicated to EPA that their existing means for transporting recovery cylinders can also be used for disposable cylinders that contain HFCs and that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. Further, some reclaimers have also indicated that they currently accept disposable cylinders to remove and recover any remaining heels left in the disposable cylinders.

HFCs that are recovered from equipment during servicing, repair, or disposal of equipment are recovered into designated types of cylinders. Such recovery cylinders are, in general, uniquely identifiable (often, they are painted gray and yellow). These cylinders are sent to reclaimers or fire suppressant recyclers after HFCs have been recovered in the field from a piece of equipment, either through a distributer or wholesaler or directly from a contractor to the reclaimer or fire suppressant recycler. Refillable cylinders may be sent to producers, blenders, repackagers, reclaimers, and fire suppressant recyclers, or other entities for continued use. Therefore, HFCs in recovery and refillable cylinders are already transported from the field to reclaimers through various means, including with or without a network of distributors that collects cylinders. For example, reclaimers, wholesalers, or distributors may maintain a fleet of refillable or recovery cylinders and may use a deposit-based system for technicians and contractors to return the cylinders. EPA notes these distribution chains for returning cylinders to the entity responsible for removing the remaining the heels are already established and in use. Contractors and technicians can make use of the existing channels they may already be using to send disposable cylinders to reclaimers or fire suppressant recyclers. Thus, the proposed requirement with a compliance date of January 1, 2025, that disposable cylinders with remaining heels be sent to a reclaimer or fire suppressant recycler is feasible.

As stated previously, every cylinder, whether disposable or refillable, still retains a residual amount of its contents, (*e.g.,* heel) even when it is considered empty for purposes of servicing, repair, or installation of equipment, and some cylinders may contain more than a heel if not all the contents are used. Removing this heel requires the use of recovery equipment, like that used to recover refrigerant from an appliance. Unfortunately, it currently is not common practice to remove the heel from disposable cylinders before they are ultimately disposed. Current practices for disposal of disposable cylinders are to prevent refilling a disposable cylinder and include puncturing the rupture disk or breaking off the shutoff valve,[116] since they are not designed to have material re-enter them. The disposal practice also demonstrates that the cylinder no longer contains any remaining heel, as any heel that had been in the cylinder would be released through these disposal practices. If the practice of puncturing the rupture disk or breaking off the shutoff valve has not been performed, HFCs in disposable cylinders could be released to the atmosphere during the disposal of the cylinder, and ultimately any remaining HFCs are released if the cylinder is crushed for scrap metal recycling. Even if the cylinder is not used for scrap metal recycling, disposable cylinders that are disposed of in a landfill have the potential to release any residual HFCs as the seal can degrade over time.

EPA is proposing that the remaining heel in containers that have been used in the servicing, repair, or installation of equipment would not be considered a virgin regulated substance. As EPA

[116] EPA also notes that other Federal regulations expressly prohibit the transportation of DOT–39 cylinders if refilled (49 CFR 178.65).

understands, some reclaimers who currently recover heels or any remaining residue from cylinders treat the returned refrigerant as used recovered material that could be contaminated and run the heel through the reclamation process as though it were returned in a recovery cylinder. This practice ensures that the heel is reprocessed, and the resulting reclaimed HFC product meets the correct standard. EPA notes that under section IV.D.2. of this proposal, reclaimed HFC refrigerants would be limited to containing no more than 15 percent virgin HFCs, by weight. For the purposes of maximizing the reclaiming of HFCs, EPA does not intend for this remaining heel to count as part of the 15 percent of virgin HFC refrigerant allowed in reclaimed HFC refrigerant because this would penalize reclaimers that are recovering the heel from cylinders.

EPA is also considering and seeking comments on an alternative approach to the proposal requiring that disposable cylinders that contain HFCs and that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment be returned to an EPA-certified reclaimer or a fire suppressant recycler. The alternative approach would involve requiring the final processor of a disposable cylinder to ensure that all regulated substances, including the remaining heel, have been recovered prior to final disposition of the cylinder. EPA currently has similar provisions under 40 CFR 82.155 for certain appliances, including requirements that a final processor (*e.g.,* scrap recyclers and landfill operators) either recover any remaining refrigerant from the appliance or receive a verification statement that the refrigerant in the disposed appliance has previously been recovered. EPA is also considering an approach that would establish a requirement that draws from both the lead proposal and alternative approach. The distinguishing feature would be to allow more than just EPA-certified reclaimers to perform the recovery (*e.g.,* distributors and wholesalers), while requiring all recovered material be sent to an EPA-certified reclaimer. In addition, 82.155(a) states that persons recovering refrigerant from certain appliances that would be disposed are required to evacuate refrigerant from the appliances. In either case, refrigerant must be evacuated from the appliance to a specified level using recovery equipment that meets applicable standards. EPA would also consider establishing recordkeeping provisions to ensure that disposable cylinders that contained HFCs have been evacuated appropriately before final disposition (*e.g.,* landfill operator of scrap recycler). EPA is seeking comment on all aspects of this potential alternative approach. For example, EPA would be interested in comments related to the level of vacuum needed or if recovery equipment that meet specific standards would be needed to ensure the remaining amount of refrigerant in the disposable cylinder is fully removed.

EPA has separately learned via a petition for partial administrative reconsideration of the Allocation Framework Rule (see *https://www.regulations.gov/comment/EPA-HQ-OAR-2021-0044-0229*) and other communication with one manufacturer who has been developing a redesigned disposable cylinder that, according to the company, includes features meant to prevent intentional venting and fugitive emissions, provide visually identifiable unique handle shapes, and accommodate machine-readable tracking identifiers (*e.g.,* QR codes or RFID chips). EPA has only limited information on this newly designed disposable cylinder prototype and seeks any relevant information from commenters on such newly designed disposable cylinders, whether from that manufacturer or other manufacturers. EPA understands that the newly-designed technology from the one manufacturer is proprietary and is a prototype that has not been commercialized. EPA seeks comment on whether this redesigned cylinder could address heels of HFC remaining in the cylinders upon disposal, which result in emissions rather than being reclaimed. Given that the language in subsection (h) concerns both maximizing reclaiming and minimizing the release of regulated substances from equipment and contemplates regulations to control of practices, processes, or activities regarding servicing, repair, disposal, or installation of equipment, EPA is seeking additional information about the cylinder's ability to consistently deliver leak reductions during normal use. The Agency is also seeking additional information about when or if this redesigned cylinder would be commercially available. Further, EPA is seeking information about whether this redesigned cylinder could improve the ability for the remaining heel to be recovered before the cylinder is disposed. Additionally, if commenters have information about other cylinder manufacturers meeting similar metrics, EPA seeks similar information.

EPA requests comment on all aspects of this proposal including the requirement for disposable cylinders that contain HFCs and that have been used for the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment to be sent to reclaimers or fire suppressant recyclers, respectively; the timing for compliance; and the amounts of regulated substances likely to either remain in or be emitted from discarded disposable cylinders absent requirements for HFC removal. EPA is requesting comment on the current channels by which contractors or technicians return cylinders containing HFCs to reclaimers or fire suppressant recyclers. EPA is also seeking comment on the alternative approach which involves the final processor ensuring that all regulated substances, including the remaining heel, have been recovered prior to final disposition of the cylinder. Further, EPA requests comment on the consideration to establish a requirement that draws from the lead proposal and the alternative approach. EPA is interested in comments of current disposal practices for disposable cylinders that involve the recovery of the heel and the subsequent handling of the recovered heel.

3. Container Tracking

EPA is proposing certain tracking requirements for regulated substances that are used in servicing, repair, or installation of certain equipment. These requirements are being proposed as part of implementing subsection (h)(1) of the AIM Act, as these provisions would control practices, processes, or activities regarding servicing, repair, or installation of equipment, and would involve a regulated substance or, in some cases, the reclaiming of a regulated substance used as a refrigerant. More specifically, these requirements would control practices, processes, and activities regarding the identification of regulated substances that could be used for servicing, repair, or installation of certain equipment, as well as the tracking of reclaimed HFCs in the supply chain. It is critical for technicians and owners or operators of equipment to know the identity of the regulated substances that they are using for servicing, repair, or installation of equipment, so that they can ensure that those regulated substances are compatible with the specifications of that equipment. For example, if equipment has been designed for use with non-flammable HFCs, it is important that technicians and owners or operators can confirm that the HFCs they are using to service, repair, or install the equipment is nonflammable. As described above, regulated

substances are transported or stored during various points in the supply chain, particularly for applications where the regulated substances are used for the servicing, repair, or installation of equipment that contain or will contain the regulated substances. The proposed tracking requirements would allow the technicians to verify the identity of regulated substances in a container, and that it meets any applicable regulatory requirements and technical specifications, before they use it for servicing, repair, or installation of certain equipment. In addition, understanding the movement of the regulated substances through the supply chain (both for virgin HFCs and for HFCs that have been recycled (as it relates to fire suppressants) and/or reclaimed) is important to understanding the ways they are used and where additional opportunities for recovery, reclamation, and/or recycling (related to fire suppressants) exist. Further, the ability to track regulated substances in the supply chain would allow the Agency to account for the actual amount of regulated substances used in equipment, verify adherence with the requirements of the regulations, and identify sectors, subsectors, or places in the supply chain where emissions occur. Tracking movement of regulated substances, including to reclaimers in certain circumstances, supports the goal of maximizing reclaiming of regulated substances by providing information to better identify challenges to increasing reclamation. This information may also be useful to better understanding points in the supply chain where HFC releases from equipment can be minimized in the future, and thus further serve one of the purposes stated in subsection (h)(1).

a. Container Tracking of Regulated Substances

EPA is proposing that any container (whether disposable or refillable) of regulated substances that enters into U.S. commerce and contains HFCs that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must contain a machine-readable tracking identifier (*e.g.,* QR code, or another identifier(s)) that contains relevant information, as described in this section.

The proposed tracking requirements for HFCs entering U.S. commerce that could be used in the servicing, repair, or installation of refrigerant-containing equipment would allow for tracking the movement of reclaimed HFCs and ensure that reclaimed HFCs are used in the subsectors in which requirements regarding their use are being proposed. These proposed requirements for tracking would also apply to HFCs that could be used in the servicing, repair, and installation of fire suppression equipment and would allow for the tracking of recycled HFC fire suppressants and ensure the use of recycled HFCs for fire suppression equipment to meet the proposed requirements. As such, these proposed tracking requirements have the added benefit of supporting and facilitating efforts to ensure compliance with the proposed requirements for the use of reclaimed or recycled HFCs, as applicable, in certain RACHP subsectors and the fire suppression sector. They help to ensure that technicians and owners or operators of equipment in those sectors can easily determine whether the HFCs that they are using for servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment are reclaimed or recycled, respectively, and otherwise meet the proposed requirements. In that way, these proposed requirements would further serve the purpose described in subsection (h)(1) of the AIM Act to maximize the reclaiming of regulated substances.

For tracking the movement of HFCs, EPA is proposing to require the generation of a machine-readable tracking identifier (*e.g.,* QR code or another identifier) by importers, producers and repackagers, reclaimers, and fire suppressant recyclers. Tracking HFCs through machine-readable tracking identifiers would provide information that helps support compliance with requirements for the use of reclaimed HFCs in certain refrigerant-containing equipment, as proposed in this action, such as whether reclaimed HFCs are being used in certain RACHP subsectors. The machine-readable tracking identifiers would provide information that would more easily allow for the determination of whether a given container of reclaimed HFCs has met the proposed standard in this action that no more than 15 percent virgin HFCs are contained in the reclaimed HFCs. Further, the machine-readable tracking identifiers would also support compliance of the proposed requirements for using recycled HFCs in fire suppression equipment. The machine-readable tracking identifier must be affixed to containers of regulated substances and include certain data elements. When the machine-readable tracking identifier is scanned, it will point to a website with a database that will indicate if the HFC in the container meets regulatory requirements, and provide certain data elements, for example, the quantity and common name of the HFC or HFC blend, the name it is currently being marketed under (*e.g.,* trade name or brand), and the date the container was filled. A discussion of the information that would be required is provided in this section of the preamble and a discussion of how the data would be treated as confidential or not is described in section V. of this preamble. EPA is proposing that in the case where a machine-readable tracking identifier affixed to a container is damaged or otherwise unreadable, this would be the same as not having a machine-readable tracking identifier at all, which would be a violation of the proposed requirements.

EPA is proposing that the tracking information must be updated each time the regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment are bought/sold or portioned into another container. For example, when regulated substances in larger containers are downpacked to smaller containers, the tracking information would need to be updated. Tracking information would also be required to be updated when the regulated substances in containers are bought or sold up to the point of sale to the final customer of the regulated substance (*e.g.,* a contractor who purchases regulated substances for their use in the servicing, repair, or installation of equipment). EPA is proposing that, as the regulated substances move in the supply chain, the person selling the regulated substances must scan the machine-readable tracking identifier as the container is sold and update the tracking information, and the person buying the container of regulated substances would need to do the same. For example, EPA is proposing that a person selling a container of regulated substances would need to identify the person receiving the container and indicate if that person is a supplier or a final customer in the tracking system. This would document the chain of custody as the regulated substance moves through the supply chain. For both disposable and refillable cylinders that contain regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment, EPA is proposing certain requirements for tracking the movement of the cylinder after it is used (as described in section IV.F.3.).

EPA is proposing to require any person who produces, imports, reclaims, recycles for fire suppression uses, repackages, or fills into a container regulated substances, reclaimed regulated substances, or recycled regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must register with EPA in the tracking system no later than the first time they would be required to generate a machine-readable tracking identifier. EPA notes that for those entities that may wish to register in advance of the required date to generate a machine-readable tracking identifier, registration in the tracking system would be available 30 or 60 days prior to the applicable compliance date (*e.g.,* as early as November 1, 2024, for producers and importers). Likewise, EPA is proposing to require that any person who purchases, sells, distributes, or offers for sale or distribution, regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must register with EPA in the tracking system no later than the first time the person would be required to update tracking information in the system. EPA notes that for those persons involved in the purchase, sale, or distribution or offering for sale or distribution of regulated substances who wish to register earlier may do so. To support the effective implementation of the tracking system, EPA intends to offer various opportunities for training potential users through webinars, fact sheets, and other guidance materials prior to the earliest required compliance dates.

Additional detail on requirements for registering in the tracking system can be found in § 84.118 of the proposed regulatory text. To support this provision, EPA is prohibiting any person from purchasing or receiving, or attempting to purchase or receive regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment from someone that is not registered with EPA. Nevertheless, EPA is proposing that this prohibition would not apply to a person purchasing or receiving, or attempting to purchase or receive regulated substances only for uses that are not related to refrigerant-containing equipment or fire suppression equipment (*e.g.* foams, aerosol propellants). EPA notes that for larger containers that contain regulated substances that may be used in multiple sectors, the Agency is proposing to require those containers would be subject to the proposed prohibition if any regulated substances in the container could be used for refrigerant-containing equipment or fire suppression equipment in order to ensure that those regulated substances are accurately accounted for. As EPA understands the supply chain, HFCs may change hands one or more times before it is purchased by the final entity in the distribution chain and subsequently sold to the final customer. As the HFCs move through the supply chain to the final customer, sellers/distributors would need to scan the containers as they are sold and update the information as needed, and buyers who intend to purchase/receive the HFCs, other than the final customer, would need to do the same.

For importers, EPA is proposing that the following information be included in the tracking system for the generation of a machine-readable tracking identifier for regulated substances that could be used in servicing, repair, or installation of equipment:

- The name or brand the regulated substance is being sold and/or marketed under;
- The date it was imported;
- The size of the container(s);
- The entry number and entry line number associated with the import;
- The unique serial number associated with the container;
- The amount and name of the regulated substance(s) in the container;
- The name, address, contact person, email address, and phone number of the responsible party at the facility where the container of regulated substance(s) was filled; and
- Certification that the contents of the container match the substance(s) identified on the label.

For producers and repackagers of regulated substances, EPA is proposing that certain information must be included in the tracking system for the generation of a machine-readable tracking identifier for regulated substances that could be used in servicing, repair, or installation of equipment. This information would be required to be included whether a container is filled for the first time after production or when transferring regulated substances from one container to one or more smaller or larger containers. EPA is proposing the following information must be included when generating the machine-readable tracking identifier:

- The name or brand the regulated substance is being sold and/or marketed under;
- The date the container was filled and by whom;
- The unique serial number associated with the container;
- The amount and name of the regulated substance(s) in the container;
- The quantity of containers it was packaged in;
- The size of the containers;
- The name, address, contact person, email address, and phone number of the responsible party at the facility where the container(s) were filled; and
- Certification that the contents of the container match the substance(s) identified on the label.

EPA is proposing that any person filling a container with reclaimed HFC refrigerants that could be used in servicing, repair, or installation of equipment include certain information in the tracking system for the generation of the machine-readable tracking identifier. This information would include the following:

- The name or brand the regulated substance is being sold and/or marketed under;
- When the HFC was reclaimed and by whom;
- The date the reclaimed regulated substance was put into a container;
- The unique serial number associated with the container;
- The size of the containers;
- The amount and name of the regulated substance(s) in the container;
- The amount of virgin regulated substance(s) in the container, if any, and that the contents of the container are certified per § 84.112(d) of the proposed regulatory text;
- Reclaimer certification that the purity of the batch was confirmed to meet the specifications in appendix A to 40 CFR part 82, subpart F; and
- Certification that the contents of the container match the substance(s) identified on the label.

EPA is proposing that any person filling a container with recycled regulated substances that could be used for servicing or installing fire suppression equipment, including for example fire suppressant recyclers, include certain information in the tracking system for the generation of the machine-readable tracking identifier. This information would include the following:

- The name or brand the regulated substance is being sold and/or marketed under;
- The date the container was filled and by whom;
- The size of the containers;
- The unique serial number associated with the container;
- The amount and name of the regulated substance(s) in the container;

• The amount of virgin regulated substance(s) in the container, if any; and
• Certification that the contents of the container match the substance(s) identified on the label.

EPA is proposing a schedule for those required to generate a machine-readable tracking identifier and affix to containers to support the effective implementation of the tracking provisions in this proposal. As of January 1, 2025, EPA would require machine-readable tracking identifiers on all containers of HFCs that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment that are imported, sold or distributed, or offered for sale or distribution by producers and importers. As of January 1, 2026, EPA would require machine-readable tracking identifiers on all containers of HFCs that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment that are filled, sold or distributed, or offered for sale or distribution, by all other repackagers and cylinder fillers in the United States, including reclaimers and fire suppressant recyclers. As of January 1, 2027, EPA would require a machine-readable tracking identifier on every container of HFCs that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment that are sold or distributed, offered for sale or distribution, purchased or received, or attempted to be purchased or received.

EPA understands that effectively implementing the tracking system in industry will require logistical adaptation and technological investment. Thus, EPA is proposing a phased-in approach for the tracking requirements would support implementation and provide additional time after the final rule is published for industry to adjust to the proposed requirements when they are fully implemented. Under this phased-in approach, the Agency would have more time to consult industry and develop an appropriate tracking system. Similarly, industry would have more time to adapt existing systems and/or procure any technology needed to support the tracking system and train staff. Further, this tracking system would have the additional advantage of supporting the proposed requirements for the use of reclaimed HFCs. It would provide an easy means for an entity to identify reclaimed HFCs and thus helps support compliance with those aspects of this proposal. For example, the tracking system would help ensure reclaimed HFCs are being used consistent with the proposed requirements in section IV.D. of this action. EPA notes that the Agency could consider making the tracking system available for use on a voluntary basis ahead of the applicable compliance dates for different types of users.

EPA is requesting comment on all aspects of this proposal. In particular, EPA is requesting comment on the proposed requirements for the tracking system related to the timing of the requirements. EPA is seeking comment on the phased-in approach to apply the requirements for effective implementation of the proposed provisions. EPA is also seeking comment on the time needed by industry for particular technological or logistical changes to effectively implement the tracking system requirements in this proposal.

b. Container Tracking of Used Cylinders

EPA is proposing specific requirements for the tracking of cylinders that contain HFCs and that have been used for the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. As noted in section IV.F.2., after cylinders (both disposable and refillable) containing regulated substances have been used in these practices, processes, and activities, they still have a remaining portion of regulated substances (*i.e.,* the heel). Tracking these cylinders that contain a heel serves the purpose identified in subsection (h)(1) of maximizing reclaim. Further, subsection (h)(2)(A) of the AIM Act provides that EPA consider its authority for increasing opportunities for reclaiming of regulated substances. Requiring tracking of the remaining heel in cylinders would ensure that the heel could be recovered and promote additional reclaim.

As proposed in section IV.F.2., EPA would require that disposable cylinders that contain HFCs and that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment be required to be returned to a reclaimer or fire suppressant recycler so that the remaining regulated substances, including heels, can be recovered. EPA is proposing that after a disposable cylinder is used in the servicing, repair, or installation of such equipment, it would be required to be tracked until it reaches an EPA-certified reclaimer or a fire suppressant recycler. As EPA understands and describes above, technicians and contractors (for refrigerant-containing equipment or fire suppression equipment) currently have channels for returning recovery cylinders. EPA anticipates that technicians and contractors would be able to use these same channels for returning disposable cylinders to reclaimers or fire suppressant recyclers. In some cases, there may be a direct connection between technicians or contractors to reclaimers or fire suppression recyclers and there is no intermediary step to returning a cylinder. In this case, the only tracking step required would be by the reclaimer or fire suppressant recycler, who would be registered in the tracking system. EPA is proposing that when a reclaimer or fire suppressant recycler receives a disposable cylinder with a remaining heel, they would be required to scan the machine-readable tracking identifier that was already affixed on the disposable cylinder and update the following information to confirm receipt:

• The date that the disposable cylinder was received; and
• The name, address, contact person, email address, and phone number of the person who sent the disposable cylinder.

EPA is proposing that when the reclaimer or fire suppressant recycler removes the remaining regulated substances from the disposable cylinder, they would be required to enter in the tracking system the following data elements:

• The date that the regulated substances were removed from the disposable cylinder;
• Certification that all remaining regulated substances were removed;
• The amount and the name of the recovered regulated substance(s).

In other cases, technicians or contractors may return cylinders to a distributor or wholesaler who collects cylinders and then sends them to a reclaimer or fire suppressant recycler. In this case, there would be an additional tracking step required by the wholesaler or distributor, who would already be registered in the tracking system. EPA is proposing to require that the distributor or wholesaler collecting the disposable cylinders scan the affixed machine-readable tracking identifier when they receive it. The wholesaler or distributor would be required to enter in the tracking system the following information:

• The date that the disposable cylinder was received; and
• The name, address, contact person, email address, and phone number of the person who sent the disposable cylinder.

EPA is proposing to require that when a reclaimer or fire suppressant recycler receives a disposable cylinder with a

remaining heel from a distributor or wholesaler, they would be required to scan the machine-readable tracking identifier and update information in the tracking system. The proposed requirements for reclaimers and fire suppressant recyclers to update information in the tracking system are the same as would be required if the reclaimer or fire suppressant recycler were to receive the disposable cylinder directly from a technician or contractor.

EPA is proposing that the tracking of disposable cylinders to reclaimers or fire suppressant recyclers would be required as of January 1, 2026. This date aligns with the proposed requirement for reclaimers and fire suppressant recyclers to track containers they fill, sell, or distribute, or offer for sale or distribution with regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. Thus, they would be registered in the tracking system already and could scan and update information as they receive disposable cylinders. This proposed date would also require distributors and wholesalers who receive returned disposable cylinders to be registered in the tracking system. For those distributors and wholesalers that would be receiving disposable cylinders, EPA is proposing that they would be required to register in the tracking system the first time they would need to access the system to update tracking information.

EPA is proposing to include additional requirements for the tracking of refillable cylinders that contain HFCs and that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. By nature, EPA expects that refillable cylinders would be involved with a return trip after they are used and have only a heel remaining. As EPA understands, fleets of refillable cylinders may be maintained by those who would frequently fill and refill them. For example, some producers, blenders, repackagers, and reclaimers may maintain a fleet of refillable cylinders. In some cases, these entities may even operate a system to track or otherwise maintain their own inventory of refillable cylinders. Refillable cylinders differ from disposable in a number of ways, notably as it relates to how the remaining regulated substances are handled after the refillable cylinder has been used and a heel remains. The remaining heel in a refillable cylinder can either be recovered, or additional HFC could be added to the refillable cylinder if it is the same chemical or blend. EPA understands this practice is common especially for larger cylinders, such as ISO tanks and rail cars.

EPA is proposing certain requirements for tracking the return of refillable cylinders that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. Contractors or technicians who are using the refillable cylinders for the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment could return refillable cylinders to a distributor or wholesaler or they could return refillable cylinders directly to a cylinder owner (*e.g.,* reclaimer, blender). In either case, EPA is proposing similar tracking requirements as those for the tracking of the return of a disposable cylinder.

EPA is proposing that reclaimers or fire suppressant recyclers would be required to enter the following information in the tracking system when they receive a refillable cylinder that contains HFCs and that has been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment:

- The date that the refillable cylinder was received;
- The name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

EPA is proposing that when the reclaimer or fire suppressant recycler removes the remaining regulated substances from the refillable cylinder, they would be required to enter in the tracking system the following data elements:

- The date that the regulated substances were removed from the refillable cylinder;
- Certification that all remaining regulated substances were removed; and
- The amount and name of the recovered regulated substance(s).

In the case that a refillable cylinder is first sent to a distributor or wholesaler, EPA is proposing that the wholesaler or distributor enter the following information to the tracking system upon receipt of the refillable cylinder:

- The date that the refillable cylinder was received; and
- The name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

In the case where a refillable cylinder is sent to a person, other than an EPA-certified reclaimer or a fire suppressant recycler, capable of refilling it with additional HFCs or blend containing HFCs, the person filling the container would be required to enter the following data elements in the tracking system upon receipt of the refillable cylinder:

- The date that the refillable cylinder was received; and
- The name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

EPA is proposing that when the person, other than an EPA-certified reclaimer or a fire suppressant recycler, who received the refillable cylinder removes any remaining regulated substances from the refillable cylinder or refills the refillable cylinder, that person must scan the machine-readable tracking identifier and update the following information in the tracking system:

- The date the remaining regulated substance was removed or the date the refillable was refilled; and
- The amount and name of the remaining regulated substance(s) removed from the refillable cylinder or the amount and name of the regulated substance(s) remaining in the refillable cylinder before it is refilled.

EPA is proposing similar timing requirements for the tracking of refillable cylinders as they are returned to the cylinder owners (*e.g.,* producers, reclaimers, fire suppressant recyclers). The tracking of refillable cylinders as they are returned to cylinder owners would be required as of January 1, 2026. Again, this date aligns with the proposed requirement for reclaimers and fire suppressant recyclers to track of containers they fill, sell, or distribute, or offered for sale or distribution with regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment. Any producers who would be involved with tracking steps associated with the return of refillable cylinders would have already had experience in the tracking system for a full year. For those distributors and wholesalers that would be receiving refillable cylinders, EPA is proposing that they would be required to register in the tracking system the first time they would need to access the system to update tracking information.

EPA is considering requirements associated with the tracking of cylinders that are used for the purpose of recovering regulated substances (*i.e.,* recovery cylinders) from refrigerant-containing equipment or fire suppression equipment. As described above, these recovery cylinders are only intended for the recovery of refrigerants or fire suppressants from equipment for the intention of sending the material to a reclaimer or fire suppressant recycler. As noted, fleets of recovery cylinders may be owned by reclaimers or

wholesalers or distributors who maintain them using a deposit-based system for the return of the cylinders. Contractors and technicians would pay a deposit and obtain the recovery cylinders from these entities and have the deposit returned when the cylinder is returned. In this case, EPA is considering and requesting comment on whether to establish tracking requirements for the entities that maintain the fleet of recovery cylinders. Such requirements would allow EPA the ability to track the amount of material that is recovered from equipment and how that material moves in the supply chain until it reaches a reclaimer or fire suppressant recycler. EPA is also interested in the tracking of recovery cylinders as it would provide additional information on the HFCs that are recovered from equipment that is being serviced, repaired, or disposed of, and their movement in the market and supply chain, and on practices, processes, or activities associated with the servicing, repair, or disposal of equipment. EPA is requesting comment on these topics, as well as additional information on how recovery cylinders are maintained in practice. For example, EPA is seeking information regarding whether contractors or technicians are owners of recovery cylinders and how they return them to reclaimers or fire suppressant recyclers.

EPA is seeking comment on all aspects of this proposal. Specifically, EPA is seeking comment on the timing for requirements to track containers (both disposable and refillable) that contain HFCs and that have been used in the servicing, repair, or installation of equipment. EPA is also seeking additional information on the overall movement of cylinders (disposable, refillable, or recovery) in the supply chain as they are returned to an entity to recover the regulated substances (or refill the container, if it is a refillable cylinder).

4. Small Cans of Refrigerant

Small cans of refrigerant, that typically contain 2 pounds or less of regulated substances, are commonly used by individuals to service their own MVACs. This do-it-yourself (DIY) servicing practice is unique to the MVAC subsector within the RACHP sector. In the 2016 CAA section 608 Rule (81 FR 82272, November 18, 2016), EPA finalized an exemption from the sales restriction at 40 CFR 82.154(c) for small cans of MVAC refrigerant with self-sealing valves. EPA is not proposing to include requirements for small cans of refrigerant with self-sealing valves (*i.e.,* those that qualify for exemption from the sales restriction under 40 CFR 82.154(c)(ix)) to be sent to a reclaimer after use or to include such small cans in the proposed container tracking requirements. As noted, they are typically used only by DIYers in the servicing of their own MVACs and contain no more than 2 pounds of regulated substances. Another distinguishing factor is the distribution chain for small cans, which are commonly sold directly to DIYers by retailers. Accordingly, EPA concludes it is not necessary to require that small cans of refrigerant (*i.e.,* those meeting the 608 requirements) be sent to a reclaimer after use or to include small cans in the proposed container tracking system to serve the regulatory goals, as described throughout section IV.F. above.

EPA welcomes comment on all aspects of this proposal. In particular, EPA seeks comments on its proposal to not include requirements for small cans of refrigerant to be returned to a reclaimer after use and to not include them in the proposed container tracking system in this rulemaking. In particular, EPA is interested in comments related to this provision as it relates to the regulatory purpose of maximizing reclaiming of regulated substances and also reducing the potential emissions of regulated substances.

G. How is EPA proposing to establish RCRA refrigerant recycling alternative standards?

1. Nomenclature Used in This Section

This section uses the term ''ignitable spent refrigerant'' to describe the refrigerants that are potentially subject to RCRA hazardous waste regulation under the current rules, and that would instead be subject to the proposed RCRA alternative standards for refrigerants when recycled for reuse, if these standards are finalized. ''Ignitability'' is one of the RCRA hazardous waste characteristics and is used to identify waste that may pose a risk to human health and the environment due to their potential to cause fires if improperly managed.[117] The characteristic of ignitability is defined in 40 CFR 261.21. As discussed in more detail below in this section, ''ignitable'' is similar, but not identical, to the term ''flammable'' as used in ASHRAE Standard 34–2022. ''Spent'' is used in the same context as ''spent material,'' which is defined in 40 CFR 261.1(c)(1) as ''any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing.'' Thus, an ''ignitable spent refrigerant'' is a used refrigerant that cannot be reused without first being cleaned, and that exhibits the hazardous characteristic of ignitability per 40 CFR 261.21.

In addition, the terms ''reclaim'' and ''recycle'' have different regulatory purposes and definitions under RCRA than under the CAA and the AIM Act. Under RCRA, a material is ''reclaimed'' if it is processed to recover a usable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents (See 40 CFR 261.1(c)(4)). Reclamation is one of the four types of ''recycling'' identified in 40 CFR 261.2(c) that can involve management of a solid waste under RCRA. Materials that are solid waste under RCRA are potentially subject to RCRA hazardous waste requirements.

In contrast, under title VI of the CAA and its implementing regulations, ''reclaim'' is a more precise term, requiring the reclaimed refrigerant to meet regulatory specifications based on AHRI Standard 700–2016, while ''recycle'' means to extract refrigerant from an appliance and clean it for reuse in equipment of the same owner without meeting all of the CAA requirements for reclamation. See those definitions in 40 CFR 82.152. Similarly, under the AIM Act, ''reclaim; reclamation'' are defined in subsection (b)(9) of the Act, and that definition refers to the purity standards under AHRI Standard 700–2016 (or an appropriate successor standard adopted by the Administrator) and the verification of purity using, at a minimum, the analytical methodology described in that standard. ''Recycle'' is not defined in the AIM Act.

To avoid confusion when discussing what regulatory requirements would apply to ignitable spent refrigerant, for the purposes of the proposed RCRA alternative standards, EPA is using the term ''recycle for reuse'' as defined at 40 CFR 266.601 to mean to process an ignitable spent refrigerant to remove contamination and prepare it to be used again. This umbrella term includes reclaiming ignitable spent refrigerants as defined in the context of the RCRA regulations at 40 CFR 261.1(c), and either reclaiming or recycling refrigerants as defined in 40 CFR 82.152. ''Recycle for reuse'' would not include recycling that involves burning for energy recovery or use in a manner constituting disposal (use in or on the land) as defined in 40 CFR 261.2(c), or

[117] EPA 1980, *Background Document for the Hazardous Waste Characteristic of Ignitability,* May 2, 1980, p.7 *https://www.epa.gov/hw/background-document-hazardous-waste-characteristic-ignitability.*

sham recycling as defined in 40 CFR 261.2(g).

2. Background

On February 13, 1991, EPA promulgated an interim final rule excluding spent chlorofluorocarbon (CFC) refrigerants from the definition of hazardous waste under RCRA when recycled for reuse (56 FR 5910). EPA was concerned that subjecting used CFC refrigerants to RCRA hazardous waste regulations would result in increased venting of these refrigerants, resulting in increased levels of ODS in the stratosphere. As described above in section III.C., EPA promulgated a series of rules implementing provisions under CAA title VI to phase out class I and class II ODS, including CFCs used as refrigerants, and establishing standards applicable to the use, disposal, and recycling of ODS refrigerants and their substitutes.

Some of these acceptable substitutes are flammable and likely to exhibit the hazardous waste characteristic of ignitability found in 40 CFR 261.21.[118] As described in section IV.C.4., ASHRAE Standard 34–2022 assigns a safety group classification for each refrigerant which consists of two alphanumeric characters (*e.g.,* A2 or B1). The capital letter indicates the toxicity class (''A'' for lower toxicity) and the numeral denotes the flammability. ASHRAE recognizes three classifications and one subclass for refrigerant flammability. The three main flammability classifications are Class 1, for refrigerants that do not propagate a flame when tested as per the ASHRAE 34 standard, ''Designation and Safety Classification of Refrigerants;'' Class 2, for refrigerants of lower flammability; and Class 3, for highly flammable refrigerants, such as the hydrocarbon refrigerants. ASHRAE recently updated the safety classification matrix to include a new flammability subclass 2L, for flammability Class 2 refrigerants that burn very slowly.[119] Since 2010, EPA's SNAP program has listed a number of flammable substitute refrigerants that have ASHRAE safety classifications of A3 (higher flammability, lower toxicity refrigerants such as propane or isobutane) or A2L (lower flammability, lower toxicity refrigerants such as HFC–32 or HFO–1234yf).

The standard for flammability under ASHRAE 34 does not correspond precisely with the RCRA standards for ignitability found in 40 CFR 261.21, but in general, refrigerants with a flammability Class of 2 or 3 are expected to be ignitable under RCRA. Spent refrigerants with a flammability class of 2L may or may not be ignitable hazardous waste, depending on the specific chemical(s) used in the refrigerant and contamination of the refrigerant during use. Note that even refrigerants that do not exhibit the characteristic of ignitability as a virgin material could become ignitable with use, especially if contaminated with oil or other lubricants, posing a risk of fire if mismanaged.[120] Similarly, the flash point of a refrigerant that is a blend of two or more chemicals can change if there is a leak during operation or during recovery and storage, when the refrigerant from multiple appliances is combined, or if the recovery process is incomplete, potentially changing the hazardous waste characteristic of the spent refrigerant when collected.

However, these ignitable spent refrigerant substitutes do not fall under the 40 CFR 261.4(b)(12) RCRA exclusion for refrigerants, since that exclusion is limited to CFC refrigerants.[121] The applicability of RCRA to flammable refrigerants is discussed in the 2016 SNAP final rule. (81 FR at 86799–86800, December 1, 2016). Consistent with that discussion, EPA considers incidental releases of spent refrigerant that occur during the maintenance, service, and repair of appliances subject to CAA section 608 (which would include venting from appliances of refrigerants that are exempt from the venting prohibition under 40 CFR 82.154(a)), and releases resulting from the disposal of household appliances both generally not to be considered disposal of a hazardous waste under RCRA. However, ignitable spent refrigerant from commercial and industrial appliances (*i.e.,* non-household appliances) would be classified as hazardous waste and would need to be managed under the applicable RCRA regulations (40 CFR parts 260 through 270) when recovered (*i.e.,* removed from an appliance and stored in an external container) or disposed of (*e.g.,* vented from a container after recovery). These requirements would include generator notification and on-site accumulation standards, emergency preparedness and other requirements, hazardous waste manifest and transportation requirements for the ignitable spent refrigerant, and RCRA permit requirements for refrigerant recyclers that store the refrigerant prior to recycling.

3. Proposed Alternative RCRA Standards for Spent Ignitable Refrigerants Being Recycled for Reuse

Similar to EPA's concerns expressed in the 1991 rulemaking establishing the CFC refrigerant recycling exclusion, EPA is concerned that applying RCRA hazardous waste requirements to the substitute refrigerants that exhibit the hazardous characteristic of ignitibility would discourage recycling and could result in an increase in releases of ignitable refrigerants, including HFC ignitable refrigerants, contrary to the goals of RCRA and to one of the purposes of regulations under subsection (h)(1) of the AIM Act, which is to minimize releases of HFCs from equipment. Moreover, inadvertently incentivizing releases of refrigerants would be contrary to RCRA section 3004(n), which requires EPA to control air emissions from hazardous waste management, as may be necessary to protect human health and the environment. Finally, the current requirements for recovery of refrigerants under the CAA section 608 rules help ensure that the ignitable spent refrigerants are legitimately recycled for reuse, and also address the flammability risks posed by ignitable spent refrigerants.

For the reasons stated above, EPA is proposing to add standards under 40 CFR part 266, subpart Q applicable to certain ignitable spent refrigerants that are recycled for reuse that would apply instead of the full RCRA Subtitle C hazardous waste requirements. The purpose of these standards is to help reduce emissions of ignitable spent refrigerants to the lowest achievable level by maximizing the recapture and safe recycling of such refrigerants during the maintenance, service, repair, and disposal of appliances.

[118] ''Flammability'' as identified by the ASHRAE standards and ''ignitability'' as identified by the RCRA 40 CFR 261.21 standard are both intended to capture the potential for a substance to cause fires. However, since the methodology used under these two systems differs, EPA is using ''flammability'' when describing the ASHRAE standard and ''ignitability'' when describing wastes that are regulated under RCRA when they meet the ignitable characteristic in § 261.21 and therefore are subject to hazardous waste management requirements. In general, a flammable substance would be presumed to be also ignitable under RCRA unless testing were to demonstrate otherwise.

[119] ASHRAE Fact Sheet *Update on New Refrigerants Designations and Safety Classification* November 2022. *https://www.ashrae.org/file%20library/technical%20resources/bookstore/factsheet_ashrae_english_november2022.pdf.*

[120] S N Kopylov et al 2019 IOP Conf. Ser.: Earth Environ. Sci. 272 022064; *https://iopscience.iop.org/article/10.1088/1755-1315/272/2/022064.*

[121] EPA is not reopening the original CFC refrigerant recycling exclusion and is not requesting comment on 40 CFR 261.4(b)(12). Any comments received on the CFC refrigerant recycling exclusion will be considered out of scope of this rulemaking.

a. Scope of the Proposed RCRA Alternative Standards

EPA is proposing that the 40 CFR part 266, subpart Q RCRA alternative standards would apply to HFCs and substitutes that do not belong to flammability Class 3. EPA is proposing to limit the alternative standards to lower flammability substitutes (Class 1, 2 and 2L) because of the lower risk of fire from the collection and recycling for reuse of these refrigerants, and the greater market value of these refrigerants, which supports the conclusion that these spent refrigerants will be recycled for reuse and not stockpiled, mismanaged, or abandoned. EPA has found that a low market value for a reclaimed product can increase the likelihood of mismanagement and abandonment occurring during hazardous waste recycling activities.[122]

In addition to this proposal, EPA is also considering the option of expanding the applicability of the RCRA alternative standards to some or all A3 refrigerants. Broadening the applicability of the exemption could encourage the development of markets for these other recycled refrigerants, even if current markets are limited, provided that they can be safely recycled for reuse.

EPA requests comment on the scope of the RCRA alternative standards, including the option of expanding the applicability of the RCRA alternative standards to Class 3 refrigerants. In addition, EPA requests comment on which additional refrigerants should qualify for the RCRA alternative standards in the final rule, if EPA determines such an expansion is appropriate. EPA requests information on the safety and economic feasibility of recycling for reuse Class 2L, 2, and 3 refrigerants both under current and projected future market conditions.

b. Proposed Requirements for the RCRA Alternative Standards

The specific standards EPA is proposing for ignitable spent refrigerant being recycled for reuse either on-site for further use in equipment of the same owner, or by the owner of the recovery equipment in compliance with MVAC standards in 40 CFR part 82, subpart B, are (1) the ignitable spent refrigerants that are recovered (*i.e.,* removed from an appliance and stored in an external container) and/or recycled for reuse using equipment that is certified for that type of refrigerant under 40 CFR 82.36 or 40 CFR 82.158; and (2) the ignitable spent refrigerants are not speculatively accumulated as defined in 40 CFR 261.1(c).

The specific standards that EPA is proposing for facilities receiving refrigerant from off-site to be recycled for reuse are (1) the reclaimer must maintain certification by EPA under 40 CFR 82.164; (2) the facility must meet the emergency preparedness and response requirements of 40 CFR part 261 subpart M, and (3) the ignitable spent refrigerants must not be speculatively accumulated as defined in 40 CFR 261.1(c). EPA is proposing these requirements be included as part of the RCRA alternative standard in order to ensure that the ignitable spent refrigerant is legitimately recycled for reuse in a way that is protective of human health and the environment.

The proposed requirement that the recovery and/or recycling equipment be certified for that type of refrigerant and appliance under 40 CFR 82.36 (for MVAC systems) or 40 CFR 82.158 (for on-site recycling) would specifically address the ignitability hazard during refrigerant recovery and recycling for reuse at MVAC recycling operations in compliance with 40 part 82 subpart B, or for recycling on-site for reuse in appliances by the same owner. In particular, appendix B4 to subpart F of 40 CFR part 82—Performance and Safety of Flammable Refrigerant Recovery and/or Recycling Equipment requires all recovery and/or recycling equipment to be tested to meet standards for the test apparatus, test gas mixtures, sampling procedures, analytical techniques, and equipment construction that will be used to determine the performance and safety of refrigerant recovery.

The proposed requirement that the spent refrigerant regulated under the new alternative standards not be speculatively accumulated per 40 CFR 261.1(c) would help prevent over-accumulation, mismanagement, and abandonment of the spent refrigerant. Restrictions on speculative accumulation have been an important element of the RCRA hazardous waste recycling regulations since they were originally promulgated on January 4, 1985 (50 FR 634–637). According to this regulatory provision, hazardous secondary materials as defined in 40 CFR 260.10 (which would include ignitable spent refrigerants) are accumulated speculatively if the person accumulating them cannot demonstrate that the material is potentially recyclable. Further, the person accumulating the hazardous secondary material must demonstrate that during a calendar year (beginning January 1) the amount of such material that is recycled or transferred to a different site for recycling is at least 75% by weight or volume of the amount of the hazardous secondary material present at the beginning of the calendar year (January 1). Hazardous secondary materials to be recycled must be placed in a storage unit with a label indicating the first date that the material began to be accumulated, or the accumulation period must be documented through an inventory log or other appropriate method. Otherwise, the hazardous secondary material is considered to be speculatively accumulated and not eligible for the alternative standards in 40 CFR part 266, subpart Q.

The requirement that facilities receiving refrigerant from off-site to be recycled for reuse maintain certification by EPA under 40 CFR 82.164 helps ensure that the recycler is experienced in proper refrigerant reclamation techniques and will manage the spent refrigerant in a manner that minimizes releases, with an explicit limit under the CAA section 608 rules of no more than 1.5 percent of the refrigerant released during the reclamation process (see 40 CFR 82.164(a)(3)). The certification requirement also helps with the transparency of the RCRA alternative standard since the list of EPA-certified refrigerant reclaimers is publicly available on EPA's website.[123] In addition, these facilities certified reclaimers under CAA section 608 and must follow recordkeeping and reporting requirements, per 40 CFR 82.164(d) including (1) maintaining records of the names and addresses of persons sending them material for reclamation and the quantity of the material (the combined mass of refrigerant and contaminants) sent to them for reclamation, and (2) reporting annually the quantity of material sent to them for reclamation by refrigerant type, the mass of refrigerant reclaimed by refrigerant type, and the mass of waste products. Finally, EPA-certified refrigerant reclaimers must verify that each batch of reclaimed refrigerant meets the specifications in the regulations (40 CFR 82.164(a)(2)), which helps ensure that the reclamation process is legitimate recycling under the RCRA regulations. EPA notes that reclaimed refrigerant that does not meet the required specifications would be considered an off-specification

[122] U.S. EPA *A Study of the Potential Effects of Market Forces on the Management of Hazardous Secondary Materials Intended for Recycling,* November 2006, available at *https://www.regulations.gov/document/EPA-1HQ-RCRA-2002-0031-0358.*

[123] EPA-Certified Refrigerant Reclaimers *https://www.epa.gov/section608/epa-certified-refrigerant-reclaimers.* Retrieved December 27, 2022.

commercial chemical product under 40 CFR 261.2(c) and subject to all applicable RCRA regulatory requirements. EPA further notes that persons who reclaim HFCs that are listed as regulated substances under the AIM Act must meet recordkeeping and reporting requirements as set forth in 40 CFR 84.31(a) and 84.31(i).

Finally, including the requirement that facilities receiving refrigerant to be recycled for reuse meet the RCRA standards under 40 CFR part 261, subpart M, Emergency Preparedness and Response for Management of Excluded Hazardous Secondary Materials, would also address risks posed specifically for ignitable spent refrigerants, which are a subset of hazardous secondary materials.[124] EPA is proposing that facilities receiving ignitable spent refrigerants from other parties for recycling for reuse be subject to this additional emergency preparedness requirement because these third-party recyclers would be receiving ignitable spent refrigerant from multiple sources, and are likely to store greater volumes for longer time periods than companies that recycle for reuse onsite or as part of an MVAC refrigerant recovery and recycling system in compliance with 40 CFR part 82, subpart B. Proposed requirements include maintaining appropriate emergency equipment on site, having access to alarm systems, maintaining needed aisle space, making arrangements with local emergency authorities, and having a designated emergency coordinator who is responsible for responding in the event of an emergency. This requirement will help protect human health and the environment in the event of a fire or other emergency at the recycler.

EPA is also specifically proposing that all recycling facilities receiving ignitable spent refrigerant from off-site meet the emergency preparedness and response requirements under 40 CFR 261.410 and 40 CFR 261.420, which include general personnel training requirements for facilities (40 CFR 261.420(g)). While these provisions currently only apply to facilities that accumulate more than 6,000 kg of hazardous secondary materials at a time, given the ignitability risk posed by the spent refrigerants at relatively small volumes, EPA's view is that these provisions are the most appropriate for all facilities accumulating ignitable spent refrigerants. EPA requests comment on these emergency preparedness and response requirements for reclaimers receiving ignitable spent refrigerants, including whether more specific training requirements for managing ignitable spent refrigerants should be included in the alternative RCRA standards, and if so, what aspects of refrigerant management those additional training requirements should address.

4. Very Small Quantity Generator Wastes

Very Small Quantity Generators (VSQGs) generate less than 100 kg of hazardous waste per month and one kilogram or less per month of acutely hazardous waste and are subject to a limited set of federal RCRA Subtitle C hazardous waste regulations, provided that they comply with the conditions set forth in 40 CFR 262.14. Among those conditions is that the VSQG must either treat and dispose of its hazardous waste in an on-site facility or ensure delivery to an off-site facility listed in 40 CFR 262.14(a)(5). Included in this list is a facility that: (1) beneficially uses or reuses, or legitimately recycles or reclaims its waste; or (2) treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.

For ignitable spent refrigerant regulated under the new proposed RCRA alternative standard, EPA is proposing to make a conforming change to 40 CFR 262.14(a)(5) to require that these refrigerants be sent to a facility that meets the requirements of 40 CFR part 266, subpart Q if sent off-site for recycling. EPA notes that while this change is more stringent than the current RCRA regulations, VSQGs would experience no additional burden since under the CAA section 608 rules, all reclaimers receiving used ODS refrigerants or non-exempt substitute refrigerants from off-site for reclamation must meet EPA's certification requirements in 40 CFR 82.164. This proposed revision would not affect refrigerants not subject to the new RCRA alternative standard (*e.g.,* ignitable spent refrigerants that are not sent off-site to be recycled for reuse).

5. RCRA Regulation of Exports and Imports of Ignitable Spent Refrigerants

The proposed RCRA alternative standard is limited to ignitable spent refrigerants that are recycled for reuse in the United States, and it requires that off-site recycling for reuse be performed at an EPA-certified reclaimer per 40 CFR 82.164. Therefore, ignitable spent refrigerants intended for export would not qualify for the proposed RCRA alternative standard, and would instead be regulated under the full RCRA Subtitle C requirements, including the relevant hazardous waste export requirements in 40 CFR part 262, subpart H.

Imports of ignitable spent refrigerants would be allowed under the alternative RCRA standards, as long as the imported refrigerants meet the requirements of the proposed RCRA alternative standard, including being recycled for reuse at an EPA-certified reclaimer per 40 CFR 82.164. This proposal does not affect or reopen any of the requirements for regulated substances established under the AIM Act that are codified at 40 CFR part 84, subpart A. EPA requests comment on the regulation of exports and imports of ignitable spent refrigerants under RCRA, including whether to add export and/or import requirements to the RCRA alternative standard under 40 CFR part 266, subpart Q.

6. Applicability of Proposed Alternative Standard in RCRA-Authorized States

Under section 3006 of RCRA, EPA may authorize states to administer the RCRA Subtitle C hazardous waste program. Following authorization, the authorized state program operates in lieu of the federal regulations. EPA retains authority to enforce the authorized state RCRA Subtitle C program, although authorized states have primary enforcement authority. EPA also retains its authority under RCRA sections 3007, 3008, 3013, and 7003. The standards and requirements for state authorization are found at 40 CFR part 271.

Prior to enactment of the Hazardous and Solid Waste Amendments of 1984 (HSWA), a state with final RCRA authorization administered its hazardous waste program entirely in lieu of EPA administering the federal program in that state. EPA did not issue permits for any facilities in that state, since the state was now authorized to issue RCRA permits. When new, more stringent federal requirements were promulgated, the state was obligated to enact equivalent authorities within specified time frames. However, the new requirements did not take effect in an authorized state until the state adopted the equivalent state requirements.

In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), which was added by HSWA, new requirements and prohibitions imposed under HSWA authority take effect in authorized states at the same time that they take effect in unauthorized states. While states must still adopt HSWA-related provisions as state law to retain authorization, EPA implements the HSWA provisions in

[124] Per 40 CFR 260.10, ''hazardous secondary materials'' means a secondary material (*e.g.,* spent material, by-product, or sludge) that, when discarded, would be identified as hazardous waste under 40 CFR part 261. Spent ignitable refrigerant meets this definition.

authorized states, including the issuance of any permits pertaining to HSWA requirements, until the state is granted authorization to do so.

Authorized states are required to modify their programs only when EPA promulgates federal requirements that are more stringent or broader in scope than existing federal requirements. RCRA section 3009 allows the states to impose standards more stringent than those in the federal program (see 40 CFR 271.1). Therefore, authorized states may, but are not required to, adopt federal regulations, both HSWA and non-HSWA, that are considered less stringent than previous federal regulations.

7. Effect on State Authorization

This action proposes to add a new subpart Q to 40 CFR part 266 *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities,* and it is being proposed under the authority of HSWA due to its purpose of reducing air emissions from the management of ignitable spent refrigerants, in accordance with EPA's mandate to control air emissions from hazardous waste management, as may be necessary to protect human health and the environment, per RCRA section 3004(n), which was promulgated under HSWA. In addition, the changes to the Very Small Quantity Generator Regulations in 40 CFR 262.14 would be promulgated under RCRA section 3001(d)(4), also a HSWA provision.

While the proposed exclusion reduces the applicability of many RCRA requirements to the recycling of ignitable spent refrigerant, the requirement that refrigerant be recovered and/or recycled for reuse using equipment that is certified for that type of refrigerant and appliance under 40 CFR 82.158, and that the recovered refrigerant be recycled for reuse at a facility certified by EPA under 40 CFR 82.164 would be more stringent than the current RCRA requirements applicable to recycling of ignitable spent refrigerant. In addition, the revisions to the VSQG regulations in 40 CFR 262.14 are more stringent than the current standard. Thus, the proposed amendment would be a HSWA rule that is more stringent than the current RCRA program and, if finalized, would be applicable on the effective date of the final rule in all states.

In addition to the proposed RCRA alternative standards for Class 1, 2 and 2L, EPA is also considering the option of expanding the applicability of the RCRA alternative standards to some or all A3 refrigerants. Broadening the applicability of the exemption could encourage the development of markets for these other recycled refrigerants, even if current markets are limited, provided that they can be safely recycled for reuse. In addition, EPA requests comment on which additional refrigerants should qualify for the RCRA alternative standards in the final rule, if EPA determines such an expansion is appropriate. EPA requests information on the safety and economic feasibility of recycling for reuse Class 2L, 2, and 3 refrigerants both under current and projected future market conditions.

H. MVAC Servicing and Reprocessed Material

EPA is not proposing requirements focused on implementing subsection (h)(2)(B) for MVAC servicing facilities that currently reclaim or recycle recovered MVAC refrigerant. EPA understands that under current industry practices, a variety of things might occur once refrigerant has been recovered from an MVAC system. For example, in some situations, MVAC servicing facilities recover refrigerant from the MVAC, recycle it consistent with EPA's regulations under CAA section 609 and return the recycled refrigerant to the same MVAC for continued use by the same owner.[125] In other circumstances, however, EPA understands that the recovered MVAC refrigerant is recycled and used in servicing a different MVAC system with a different owner (*e.g.,* to charge or recharge such a system), thereby in effect selling or transferring the refrigerant to a new owner. See 40 CFR 82.34(d)(2). Additionally, EPA understands that there are circumstances where refrigerant recovered from MVAC systems is reclaimed before it is reused or sold or transferred to a new owner.

The servicing and repair of MVAC systems with HFCs and HFC substitutes (*e.g.,* HFO–1234yf and R–744 (CO_2)) have long been subject to certain requirements that are separate from those that apply for the servicing and repair of stationary appliances. Regulations under CAA section 609 require that technicians use equipment approved pursuant to the standards at 40 CFR 82.36 to service and repair MVAC systems. Under those existing regulations, recovered refrigerant can either be recycled on-site or off-site using approved equipment designed to both recover and recycle refrigerant certified to meet SAE J2099.[126] SAE J2099 establishes the minimum level of refrigerant purity (*e.g.,* 98% for HFO–1234yf) required for the certification of on-site recovery and recycling machines per SAE 2843 and SAE J2788. Refrigerant from reclamation facilities that is used for the purpose of recharging MVACs must be at or above the standard of purity (*i.e.,* 99.5%) level defined in AHRI Standard 700, and EPA understands that such reclamation typically occurs off-site. See 40 CFR 82.32(e)(2).

Due to the longstanding practice of on-site recycling of MVAC refrigerant, some industry stakeholders[127] question the need to reclaim recovered MVAC refrigerant to meet the purity described in AHRI Standard 700–2016 as specified in the definition of the terms ''reclaim'' and ''reclamation'' in subsection (b)(9) of the Act. They note that equipment certified to meet SAE J2099 are rated to clean and separate material in contaminated refrigerant to a 98% purity level, which provides the same level of performance and durability as virgin refrigerant for purposes of use in MVACs. They also pointed out the ambiguity in the phrase ''(or an appropriate successor standard adopted by the Administrator)'' in definition of ''reclaim'' and ''reclamation'' in the AIM Act. While there may be a variety of situations that could lead to the adoption of a successor standard by the Administrator within the meaning of subsection (b)(9), in EPA's view one such circumstance would be if AHRI published a subsequent standard or addendum regarding the reprocessing of a recovered regulated substance to a specified purity standard and the analytical methodology to verify the purity of that regulated substance, and that standard were adopted by the Administrator as a successor standard.

EPA is aware that AHRI is in consultations with SAE International, the Mobile Air Climate Systems (MACS), and other industry stakeholders to develop a standard (or update an existing standard) that may be more appropriate for MVAC servicing than the AHRI Standard 700–2016.[128] If

[125] Another example of an instance where there is no change in ownership is the off-site servicing and recharge of MVAC systems for a fleet of trucks that are owned by the same company.

[126] SAE International, 2012. SAE J2099: Standard of Purity for Recycled R–134a (HFC–134a) and R–1234yf (HFO–1234yf) for Use in Mobile Air-conditioning Systems.

[127] March 6, 2023, EPA meeting with Mobile Air Climate Systems (MACS) Association and SAE International. Meeting materials available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov.*

[128] Letter to EPA from AHRI, Alliance for Automotive Innovation, Alliance for Responsible Atmospheric Policy, and MACS dated June 9, 2023.

Continued

such a standard is finalized, EPA intends to review it, and any supporting information, and consider what implications it might have for potential approaches that the Agency might consider in future rulemakings to implement subsection (h)(2)(B) for MVAC systems. Additionally, the Agency could consider establishing its own purity standard and analytical methodology for verification of the purity of recovered regulated substances, as well as specifying minimum equipment requirements for MVAC systems under subsection (h). Among other things, such a standard could be based on consideration of input from stakeholders and consensus standards bodies. EPA could consider adopting any such standard in a future rulemaking. In light of the time needed to develop such standards (whether developed by EPA or standard setting organizations) and for EPA to consider whether they are appropriate for EPA to adopt as successor standards in the context of subsection (h), as well as the implications that such standards might have on the regulations that EPA might propose to implement subsection (h)(2)(B) for MVAC systems, EPA is not proposing such regulations in this NPRM. Instead, EPA intends to issue proposed regulations for this sector at a later date, once it has additional clarity on the development of such a successor standard and its likely content.

V. How is EPA proposing to treat data reported under this rule?

Consistent with EPA's commitment to transparency in program implementation, as well as to proactively encourage compliance, support enforcement of program requirements and enable third-party engagement to complement EPA's enforcement efforts, EPA is proposing several ways it intends to release data that would be collected if this rule were finalized as proposed.

EPA has reviewed the data elements that are proposed to be reported under this rule. Based on that review, EPA is proposing certain categorical emissions data and confidentiality determinations in advance through this notice and comment rulemaking for individual reported data elements that EPA would be collecting through this rulemaking. This proposal identifies certain information categories that must be submitted to EPA that will be subject to disclosure to the public without further notice because the information has been determined to be either ''emission data'' under 40 CFR 2.301(a), or the Agency has found that the information does not meet the standard for confidential treatment under Exemption 4 of the Freedom of Information Act (FOIA). EPA is also proposing to identify certain other categories of information that may be entitled to confidential treatment. For information EPA is not determining in this rulemaking to be emission data or not otherwise entitled to confidential treatment, EPA will apply the 40 CFR part 2 process for establishing case-by-case confidentiality determinations. As explained further in the following discussion, the emission data and confidentiality determinations in this proposed action are intended to increase the efficiency with which the Agency responds to FOIA requests and to provide consistency in the treatment of the same or similar information. Establishing these determinations through this rulemaking will provide predictability for both information requesters and submitters. The emission data and confidentiality determinations in this proposed rule will also increase transparency, as well as supporting compliance with, and enforcement of, the program's requirements.

A. Background on Determinations of Whether Information Is Entitled to Treatment as Confidential Information

1. Confidential Treatment of Reported Information

Regulated entities that must submit information to EPA frequently claim that some or all of that information is entitled to confidential treatment and therefore exempt from disclosure under Exemption 4 of the FOIA.[129] Exemption 4 exempts from disclosure ''trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential.'' [130] In order for information to meet the requirements of Exemption 4, EPA must find that the information is either: (1) a trade secret, or (2) commercial or financial information that is: (a) obtained from a person, and (b) privileged or confidential.

Generally, when we have information that we intend to disclose publicly that is covered by a claim of confidentiality under FOIA Exemption 4, EPA has a process to make case-by-case or class determinations under 40 CFR part 2 to evaluate whether such information qualifies for confidential treatment under the exemption.[131] [132] In this action, EPA is proposing to make categorical emission data and confidentiality determinations in advance through this notice and comment rulemaking for some information that must be submitted to EPA under the proposed requirements. If EPA finalizes these determinations, that information would be subject to disclosure to the public without further notice.

The U.S. Supreme Court decision in *Food Marketing Institute* v. *Argus Leader Media,* 139 S. Ct. 2356 (2019) (*Argus Leader*) addresses the meaning of ''confidential'' within the context of FOIA Exemption 4. The Court held that ''[a]t least where commercial or financial information is both customarily and actually treated as private by its owner and provided to the government under an assurance of privacy, the information is 'confidential' within the meaning of Exemption 4.'' [133] The Court identified two conditions ''that might be required for information communicated to another to be considered confidential.'' [134] Under the first condition, ''information communicated to another remains confidential whenever it is customarily kept private, or at least closely held, by the person imparting it.'' [135] The second condition provides that ''information might be considered confidential only if the party receiving it provides some assurance that it will remain secret.'' [136] The Court found the first condition necessary for information to be considered confidential within the meaning of Exemption 4, but did not address whether the second condition must also be met.

Following the issuance of the Court's opinion in *Argus Leader,* the U.S. Department of Justice (DOJ) issued guidance concerning the confidentiality prong of Exemption 4, articulating ''the newly defined contours of Exemption 4'' post-*Argus Leader.*[137] Where the

Available in the docket (EPA–HQ–OAR–2022–0606) for this proposed rulemaking at *https://www.regulations.gov.*

[129] 5 U.S.C. 552(b)(4).

[130] 5 U.S.C. 552(b)(4).

[131] 40 CFR 2.205.

[132] This approach of making categorical determinations for a class of information is a well-established Agency practice. Prior examples of rules where EPA has made such categorical determinations include *Confidentiality Determinations for Data Required Under the Mandatory Greenhouse Gas Reporting Rule and Amendments to Special Rules Governing Certain Information Obtained Under the Clean Air Act* (76 FR 30817) (May 26, 2011); *Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards* (88 FR 4296) (January 24, 2023); and *Renewable Fuel Standard (RFS) Program: RFS Annual Rules* (87 FR 39600) (July 1, 2002).

[133] Argus Leader, 139 S. Ct. at 2366.

[134] Id. at 2363.

[135] Id. (internal citations omitted).

[136] Id. (internal citations omitted).

[137] ''Exemption 4 After the Supreme Court's Ruling in Food Marketing Institute v. Argus Leader Media and Accompanying Step-by-Step Guide,''

Government provides an express or implied indication to the submitter prior to or at the time the information is submitted to the Government that the Government would publicly disclose the information, then the submitter generally cannot reasonably expect confidentiality of the information upon submission, and the information is not entitled to confidential treatment under Exemption 4.[138] In this proposed rule, EPA intends to clearly assert that certain information will not be kept confidential and will be disclosed publicly, if it is determined to not be entitled to confidential treatment in the final version of this rule. This assertion aligns with the Supreme Court's decision, and the subsequent DOJ guidance that the government's assurances that a submission will be treated as *not* confidential should dictate the expectations of submitters. If EPA were to finalize these determinations, submitters would be on notice before they submit any information that EPA has determined that the identified data elements outlined in the tables below, as well as in the memorandum provided in the docket for this action titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule,* will not be entitled to confidential treatment upon submission and may be released by the Agency without further notice. As a result, submitters will not have a reasonable expectation that the information will be treated as confidential; rather, they should have the expectation that the information will be disclosed.

As described further below, EPA is proposing to make categorical confidentiality determinations as some of the proposed data elements that would be submitted to EPA contain information that is not entitled to confidential treatment because either: it is not the type of information that submitters customarily keep private or closely held; it is already publicly available; or it is discernible information that is self-evident or readily observable through reverse engineering by a third party.

2. Emissions Data Under Section 114 of the Clean Air Act

The AIM act provides that, ''[s]ections 113, 114, 304, and 307 of the Clean Air Act (42 U.S.C. 7413, 7414, 7604, 7607) shall apply to this section and any rule, rulemaking, or regulation promulgated by the Administrator pursuant to this section as though this section were expressly included in title VI of that Act (42 U.S.C. 7671 *et seq.*).'' The CAA states that ''[a]ny records, reports or information obtained under [section 114] shall be available to the public. . . .'' [139] Thus, the CAA begins with a presumption that the information submitted to EPA will be available to be disclosed to the public. It then provides a narrow exception to that presumption for information that ''would divulge methods or processes entitled to protection as trade secrets. . . .'' The CAA then narrows this exception further by excluding ''emission data'' from the category of information eligible for confidential treatment. While the CAA does not define ''emission data,'' EPA has done so by regulation at 40 CFR 2.301(a)(2)(i). EPA releases, on occasion, some of the information submitted under CAA section 114 to parties outside of the Agency of its own volition, through responses to requests submitted under the FOIA,[140] or through civil litigation. As noted in the prior section, generally, when we have information that we intend to disclose publicly that is covered by a claim of confidentiality under FOIA Exemption 4, EPA has a process to make case-by-case or class determinations under 40 CFR part 2. This process includes an evaluation of whether such information is or is not emission data, and whether it otherwise qualifies for confidential treatment under FOIA Exemption 4.[141]

The regulations at 40 CFR 2.301 [142] define emission data to include the following:

(A) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of any emission which has been emitted by the source (or of any pollutant resulting from any emission by the source), or any combination of the foregoing;

(B) Information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of the emissions which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source); and

(C) A general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).

In this proposal, we are applying the regulatory definition of ''emission data'' in 40 CFR 2.301(a)(2)(i) to propose that certain categories of source certification and compliance information are not entitled to confidential treatment because they qualify as emissions data. If EPA finalizes these determinations, that information would be subject to disclosure to the public without further notice. As relevant to this proposal, a ''source'' for purposes of the definition in 40 CFR 2.301 is generally the equipment covered by a proposed regulatory requirement, such as a refrigerant-containing appliance or fire suppression equipment. EPA's broad general definitions of emissions data also exclude certain information related to products still in the research and development phase or products not yet on the market except for limited purposes. Thus, for example, 40 CFR 2.301(a)(2)(ii) excludes information related to ''any product, method, device, or installation (or any component thereof) designed and intended to be marketed or used commercially but not yet so marketed or used.'' This specific exclusion from the definition of emissions data is limited in time. EPA does not believe data related to this exclusion are implicated in this proposed rulemaking because these data relate to equipment currently in use and HFCs moving through commerce.

B. Data Elements Reported to EPA Under the Leak Repair Provisions

Consistent with EPA's commitment to transparency in program implementation, EPA has reviewed the data elements in the chronically leaking appliance report and the other ad hoc reports proposed under the leak repair requirements to see if information under the umbrella of those data elements could be considered entitled to confidential treatment. EPA is proposing to treat certain data elements under the leak repair provisions as not entitled to confidential treatment. Tables 2 and 3 outline individual data elements that will not be handled as confidential, emission data, or

Office of Information Policy, U.S. DOJ, (October 4, 2019), available at *https://www.justice.gov/oip/exemption-4-after-supreme-courts-ruling-food-marketing-institute-v-argus-leader-media.*

[138] *See id.;* see also ''Step-by-Step Guide for Determining if Commercial or Financial Information Obtained from a Person is Confidential under Exemption 4 of the FOIA,'' Office of Information Policy, U.S. DOJ, (updated October 7, 2019), available at *https://www.justice.gov/oip/step-step-guide-determining-if-commercial-or-financial-information-obtained-person-confidential.*

[139] CAA section 114(c); 42 U.S.C. 7414(c).

[140] 5 U.S.C. 552.

[141] 40 CFR 2.301(a)(2)(i).

[142] The Agency is not reopening, taking comment on, or proposing to modify this definition.

otherwise not entitled to confidential treatment. Additional information on these proposed determinations is provided in the memorandum titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule,* which is available in the docket for this action. There may be additional reasons not to release individual data elements determined to not be entitled confidential treatment, for example if it is personally identifiable information (PII). The Agency will separately determine whether any data should be withheld from release for reasons other than business confidentiality before data is released. EPA requests comment on the following proposed confidentiality determinations.

BILLING CODE 6560–50–P

Table 2. Proposed Determination of Confidentiality Status for Data Elements Related to Reports on Chronically Leaking Appliances

Description of data element	**Confidentiality status and Rationale**[a]
Identification Information (owner name, facility name, facility address where appliance is located)	No confidential treatment/Emissions Data
Appliance ID or Description (for facilities with multiple appliances)	No confidential treatment/Emissions Data
Appliance type (comfort cooling, IPR, or commercial refrigeration)	No confidential treatment/Emissions Data
Refrigerant type	No confidential treatment/Emissions Data
Full charge of appliance (pounds)	No confidential treatment/Emissions Data
Annual percent refrigerant loss	No confidential treatment/Emissions Data
Dates of refrigerant addition	No confidential treatment/Emissions Data
Amounts of refrigerant added	No confidential treatment/Emissions Data
Date of last successful follow-up verification test	No confidential treatment/Emissions Data
Explanation of cause of refrigerant losses (Narrative)	No confidential treatment/Emissions Data
Description of the repair actions taken (Narrative)	No confidential treatment/Emissions Data
Whether a retrofit or retirement plan been developed for the appliance, and, if so, the anticipated date of retrofit or retirement	No confidential treatment/Emissions Data

[a] EPA provides rationale of the confidentiality determination in the memorandum titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule*, which is available in the docket (EPA-HQ-OAR-2022-0606) of this proposed rulemaking at *https://www.regulations.gov*.

Table 3. Proposed Determination of Confidentiality Status for Data Elements Related to Other Leak Repair Notifications and Extension Requests

Description of data element	Confidentiality status and Rationale[a]
Extension of time to complete repairs: Identification and address of the facility; the name of the owner or operator of the appliance; the leak rate; the method used to determine the leak rate and full charge; the date the appliance exceeded the applicable leak rate; the location of leak(s) to the extent determined to date; any repair work that has been performed thus far, including the date that work was completed; the reasons why more than 30 days (or 120 days if an industrial process shutdown is required) are needed to complete the repair; and an estimate of when the work will be completed. If the estimated completion date is to be extended, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA within 30 days of identifying that the completion date must be extended.	No confidential treatment/Emissions Data
Relief from the obligation to retrofit or retire an appliance: The date that the requirement to develop a retrofit or retirement plan was triggered; the leak rate; the method used to determine the leak rate and full charge; the location of the leak(s) identified in the leak inspection; a description of repair work that has been completed; a description of repair work that has not been completed; a description of why the repair was not conducted within the applicable time frame; and a statement signed by an authorized official that all identified leaks will be repaired and an estimate of when those repairs will be completed (not to exceed one year from date of the plan).	No confidential treatment/Emissions Data
Extension of time to complete the retrofit or retirement of an appliance: Identification of the appliance; name of the owner or operator; the leak rate; the method used to determine the leak rate and full charge; the date the appliance exceeded the applicable leak rate; the location of leaks(s) to the extent determined to date; any repair work that has been finished thus far, including the date that work was finished; a plan to finish the retrofit or retirement of the appliance; the reasons why more than one year is necessary to retrofit or retire the appliance; the date of notification to EPA; and an estimate of when retrofit or retirement work will be finished.	No confidential treatment/Emissions Data
Notification of exclusion of purged refrigerants that are destroyed from annual leak rate calculations: The identification of the facility and a contact person, including the address and telephone number; A description of the appliance, focusing on aspects relevant to the purging of refrigerant and subsequent destruction; A description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept by the owners or operators where the appliance is located; The frequency of monitoring and data-recording; and A description of the control device, and its destruction efficiency.	No confidential treatment/Emissions Data
[a] EPA provides rationale of the confidentiality determination in the memorandum titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule*, which is available in the docket (EPA-HQ-OAR-2022-0606) of this proposed rulemaking at *https://www.regulations.gov*.	

BILLING CODE 6560–50–C

EPA is proposing to find that the information contained within these data elements would categorically not be eligible for confidential treatment because they are either readily apparent or easily ascertainable by an outsider (*e.g.,* owner name, facility name, facility address where appliance is located, appliance ID or description, and appliance type (comfort cooling, IPR, or commercial refrigeration)) or they are considered emissions data under 40 CFR 2.301 (*e.g.,* refrigerant type, full charge of appliance, annual percent refrigerant loss, dates of refrigerant addition, amounts of refrigerant added, date of last successful follow-up verification test, explanation of cause of refrigerant losses, repair actions taken, and whether a retrofit or retirement plan been developed for the appliance, and, if so, the anticipated date of retrofit or retirement), or they fit into both categories. Similarly, the items included in a request for an extension for leak repair, request for relief from the obligation to retrofit or retire an appliance, request for an extension of time to complete the retrofit or retirement of an appliance, and a notification of exclusion of purged refrigerants that are destroyed from annual leak rate calculations are likewise not eligible for confidential treatment because this information is readily ascertainable/observable by an outside entity, or are considered emissions data under 40 CFR 2.301, or both. EPA notes that in these provisions, the source of the emissions would be the regulated equipment, and in the case of all of these notifications these data are necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of any emission which has been emitted by the source and/or information necessary to determine the identity, amount, frequency, concentration, or other characteristics (to the extent related to air quality) of the emissions which, under the proposed leak repair provisions, the source was authorized to emit; and a general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources (including, to the extent necessary for such purposes, a description of the device, installation, or operation constituting the source).

C. Data Elements Related to the Generation of Machine-Readable Tracking Identifiers and the Tracking of HFCs

Building on EPA's experience implementing similar requirements under the AIM Act, EPA is proposing to maximize program transparency. Market transparency would facilitate program implementation and increase the public and current market participants' ability to provide complementary compliance assurances and engagement.

Maximizing transparency incentivizes compliance and promotes accountability and allows the public and competing companies to identify and report noncompliance to EPA.

As previously noted, EPA is proposing to establish a tracking system using machine-readable tracking identifiers to track the movement of regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment through commerce, including requiring anyone that introduces into interstate commerce or sells a regulated substance that could be used in servicing, repair, or installation of equipment to be registered in the system. This program will allow buyers to able to know that they are purchasing regulated substances that meet the regulatory requirements and to help determine whether they consist of reclaimed material.

This proposal involves the collection of certain data elements. Anyone who is filling a container or cylinder, whether for the first time or when transferring HFCs from one container to one or more smaller or larger containers, would be required to enter information in the tracking system and, in the case of a container being filled for the first time, generate a new machine-readable tracking identifier. Such information includes: the brand it would be sold under, the quantity and composition of HFC(s) in the container, the date it was packaged or repackaged, the quantity of containers it was packaged in, and the size of the containers. To help ensure regulated HFCs sold by reclaimers are legally reclaimed material and eligible for sale, EPA is proposing that reclaimers would need to log into the tracking system and, for each container of HFCs prior to selling regulated substances, provide information such as the date the HFC was reclaimed and by whom; what regulated substance(s) (and/or the blend containing regulated substances) is in the container; how many kilograms were put in the container and on what date the container was filled; whether the purity of the batch was confirmed to meet the specifications in appendix A to 40 CFR part 82, subpart F; on what date the batch was tested; and who certified it met the specifications. If a container is filled with reclaimed and virgin HFC(s), EPA proposes that the reclaimer would have to also provide information on how much virgin HFC was used.

If EPA were to finalize a tracking system with machine-readable tracking identifiers, EPA is proposing to release several data elements associated with each container of HFCs to potential buyers of HFC material, to support this system, because it is not the type of information that is customarily closely held or kept private by companies. We further note that the EPA recently made categorial determinations that this same type of information would not be eligible for confidential treatment in the Allocation Framework Rule (86 FR 55116, 55186, October 5, 2021).[143] Accordingly, submitters of this data have no reasonable expectation that these data elements are entitled to confidential treatment, and the Agency is therefore not required to treat this information as confidential when it is received and maintained in Agency records.

To allow buyers of HFCs to determine whether the HFC they are purchasing complies with regulatory requirements, EPA proposes to release the following information: (1) Whether the HFC being sold is legal to purchase based on information available to EPA; (2) when the container was filled; (3) the specific HFCs in the container; and (4) and the brand name the HFCs are being sold under. EPA will also release a list of registered suppliers so purchasers know where they can buy HFCs that conform to regulatory requirements. As noted above, EPA determined in the Allocation Framework Rule that these data elements would not be eligible for confidential treatment, and accordingly, there would be no reasonable expectation of confidentiality when this information is submitted in this context. A more granular description of these data elements, together with their proposed confidentiality status, is presented in Table 4. There may be additional reasons not to release individual data elements determined to not be entitled to confidential treatment, for example if it is PII. The Agency will

[143] As noted elsewhere in this proposal, petitions for judicial review challenging aspects of the Allocation Framework Rule were filed in the D.C. Circuit. The court rejected all of those challenges except for the challenges to the QR code and refillable-cylinder regulations, which were vacated. *Heating, Air Conditioning & Refrigeration Distributors Int'l* v. *EPA,* 71 F.4th 59 (D.C. Cir. 2023). Although that vacatur may affect some of the underlying requirements that lead to the categorical determinations in the Allocation Framework Rule, the categorical determinations themselves were not challenged, and the court's opinion does not address them. Thus, the court opinion does not affect the validity of the grounds for the categorical determinations in the Allocation Framework Rule.

separately determine whether any data should be withheld from release for reasons other than business confidentiality before data is released. EPA has also provided in the docket for this action a memorandum that provides additional information on the proposed determinations, including listing each individual data element required to be reported under this proposed regulation and the proposed determination whether each element is entitled to confidential treatment or not. The Agency will separately determine whether any data should be withheld from release for reasons other than business confidentiality before data release. Certification-specific data would accompany each kilogram of HFC moving through commerce (as tracked with a machine-readable tracking identifier). EPA requests comment on these proposed determinations.

Based on the information available at this time of this proposal, EPA is proposing to determine that the entry number and entry line number associated with the import (if imported) would be entitled to confidential treatment because it is EPA's understanding that these numbers could be used to identify the import broker, and thus have the potential to reveal confidential business relationships (*i.e.,* the relationship between the importer and the import broker). EPA requests comment on this determination, including comments on why this information may not be entitled to confidential treatment. Specifically, EPA requests comment on whether these numbers could be used to identify import brokers that would not otherwise be identifiable via publicly available information. EPA also requests comment on whether the existence of a business relationship between an import broker and an importer is information that is customarily closely held.

Based on the information available at this time of this proposal, EPA is proposing to determine that the entity/company that fills a container is eligible for confidential treatment. EPA's understanding is that these data are customarily and actually considered to be confidential and closely held by companies. In EPA's experience, these data could implicate confidential business relationships (*i.e.,* one supplier filling for several brands) and that the revelation of these business relationships could implicate the submitter's business or competitive position. EPA requests comment from all stakeholders on this determination, including comments on why this information may not be entitled to confidential treatment. EPA may, based on public comment, revise this determination.

Based on the information available at this time of the proposal, EPA is proposing to determine that the chain of custody of the HFCs, beyond the two parties currently involved in any specific transaction, is eligible for confidential treatment. EPA's understanding is that these data elements are customarily and actually considered to be confidential and closely held by companies. In EPA's experience, business submitters actually and customarily treat their company customer lists and supply chains as confidential because public release of this information would cause harm to the submitter's business or competitive position. For instance, releasing a submitter's customer list would allow competitors access to the submitter's valuable and otherwise private business asset, which could cause the company to lose their market advantage. EPA requests comment from all stakeholders on this determination, including comments on why this information may not be entitled to confidential treatment.

BILLING CODE 6560–50–P

Table 4. Proposed Determination of Confidentiality Status for Data Elements Related to HFC Tracking

Description of data element	Confidentiality status and Rationale[a]
Tracking system registration data elements	
Name and address of the company, contact information for the owner of the company, the date(s) of and State(s) in which the company is incorporated and State license identifier(s), and the address of each facility that sells or distributes or offers for sale or distribution HFCs	No confidential treatment
How the company introduces HFCs into U.S. commerce	No confidential treatment
Tracking system data elements	
Whether the HFC being sold complies with regulatory requirements based on information available to EPA	No confidential treatment
Date the container was filled	No confidential treatment
The specific HFCs in the container	No confidential treatment
The brand name the HFCs are being sold under	No confidential treatment
List of suppliers registered with the system	No confidential treatment
Date of import (if imported)	No confidential treatment
The entry number and entry line number associated with the import (if imported)	Confidential treatment
Unique serial number associated with the container	No confidential treatment
Quantity of each HFC in the container	No confidential treatment
Name, address, contact person, email address, and phone number of the responsible party at the facility where the container of regulated substance(s) was filled	No confidential treatment
Certification that the contents of the cylinder match the substance(s) identified on the label.	No confidential treatment
The entity/company that filled the container	Confidential treatment
Quantity of containers the HFC was packaged in (if part of a batch fill)	No confidential treatment
The size of the container	No confidential treatment
Date the HFCs were reclaimed (if reclaimed)	No confidential treatment
Certification that the purity of the batch was confirmed to meet the specifications in appendix A to 40 CFR part 82, subpart F. (if reclaimed)	No confidential treatment
The amount of the HFCs in the container that are virgin HFCs, reclaimed HFCs, or recycled HFCs	No confidential treatment
Certification that reclaimed HFCs in a container meet the requirements under § 84.112(d) of the proposed regulatory text	No confidential treatment
The current owner of the container of HFCs	No confidential treatment
The chain of custody of the HFCs, beyond the two parties currently involved in any specific transaction, including an indication if the person receiving the HFCs is an intermediate supplier or a final customer	Confidential treatment
Date that a cylinder (disposable or refillable) that	No confidential treatment

contains HFCs and that had been used in the servicing, repair, or installation of certain equipment was received	
The name, address, contact person, email address, and phone number of the person who sent a used cylinder (disposable or refillable)	No confidential treatment
Date that any remaining HFC heel or residue in a cylinder (disposable or refillable) had been removed	No confidential treatment
Certification that all HFCs have been removed from a cylinder (disposable or refillable)	No confidential treatment
The amount and name of the removed HFCs from a used cylinder or the amount remaining in a refillable cylinder before it is refilled	No confidential treatment
[a] EPA provides rationale of the confidentiality determination in the memorandum titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule*, which is available in the docket (EPA-HQ-OAR-2022-0606) of this proposed rulemaking at *https://www.regulations.gov*.	

BILLING CODE 6560–50–C

D. Data Elements Related to Fire Suppression

As described in section IV.E. of this document, EPA is proposing certain reporting requirements related to the use of regulated substances in the fire suppression sector. These reporting requirements allow for the monitoring of program implementation and of compliance with the proposed requirements.

EPA is proposing to require that certain entities in the fire suppression sector provide data to the EPA that is similar to the data they already voluntarily collect and report to HEEP as mentioned in section IV.E.4.b. Relevant reporting entities covered under this proposed requirement include entities that perform first fill of equipment, service (*e.g.,* recharge) equipment and/or recycle regulated substances, such as equipment manufacturers, distributors, agent suppliers or installers that recycle regulated substances. EPA is proposing that the covered entities report annually: (1) the quantity of each regulated substance held in inventory onsite broken out by recovered, recycled, and virgin; (2) the quantity of material (the combined mass of regulated substance and contaminants) by regulated substance sold and/or recycled for the purpose of installation of new equipment and servicing (*e.g.,* recharge) of fire suppression equipment; (3) the total mass of each regulated substance sold and/or recycled; and (4) the total mass of waste products sent for disposal, along with information about the disposal facility if waste is not processed by the reporting entity. Table 5 presents a more granular description of these data elements, together with their proposed confidentiality status. There may be additional reasons not to release individual data elements determined to not be entitled confidential treatment, for example if it is PII. The Agency will separately determine whether any data should be withheld from release for reasons other than business confidentiality before data is released.

EPA proposes to determine that these data are emissions data as described at 40 CFR 2.301 because they provide a general description of the location and/or nature of the source to the extent necessary to identify the source and to distinguish it from other sources. As a separate alternative basis, EPA proposes to determine that these data are not entitled to confidential treatment because they are not closely held as confidential by the submitter. EPA requests comment on these proposed determinations. Additional information on the rationale for these proposed determinations is provided in a memorandum, which is available in the docket for this action.

Table 5. Proposed Determination of Confidentiality Status for Data Elements Related to Reports on Fire Suppression

Description of data element	Confidentiality status and Rationale[a]
Identification Information (owner name, facility name, facility address where appliance is located)	No confidential treatment
Quantity of material (the combined mass of regulated substance and contaminants) by regulated substance sold, recovered, recycled, and virgin for the purpose of installation of new equipment and servicing of fire suppression equipment	No confidential treatment
Total mass of each regulated substance sold, recovered, recycled, and virgin	No confidential treatment
Total mass of waste products sent for disposal, along with information about the disposal facility if waste is not processed by the reporting entity	No confidential treatment

[a] EPA provides rationale of the confidentiality determination in the memorandum titled *Proposed Confidentiality Determinations and Emission Data Designations for Data Elements in the Proposed Rule*, which is available in the docket (EPA-HQ-OAR-2022-0606) of this proposed rulemaking at *https://www.regulations.gov*.

VI. What are the costs and benefits of this proposed action?

A. Background

EPA is providing information on the costs and benefits for the provisions related to managing regulated substances and their substitutes in this proposed rule. The analyses, presented in the *Analysis of the Economic Impact and Benefits of the Proposed Rule* draft TSD and the RIA addendum, are contained in the docket to this proposed rule and are intended to provide the public with information on the relevant costs and benefits of this action, if finalized as proposed, and to comply with executive orders. To the extent that EPA has considered these analyses in developing an aspect of this proposed rule, EPA has summarized those analyses and the relevant results in the *Analysis of the Economic Impact and Benefits of the Proposed Rule* draft TSD, which is available in the docket for this proposed rule. In the RIA addendum, EPA also included estimates of the social cost of HFCs in order to quantify climate benefits, for the purpose of providing useful information to the public and to comply with E.O. 12866. Although EPA is using the social costs of HFCs for purposes of that assessment, this proposed action does not rely on the estimates of these costs as a record basis for the agency action, and EPA would reach the proposed conclusions even in the absence of the social costs of HFCs.

The climate benefits and compliance costs stemming from this proposed rule include those related to: (1) the proposed provisions on leak repair, leak detection, ALD systems, and recordkeeping and reporting related to leak-related provisions; (2) the proposed amendments to the RCRA hazardous waste regulations; (3) requiring the tracking and management of cylinders for HFCs; (4) requiring use of reclaimed HFCs in the initial charging and servicing of certain types of refrigerant-containing equipment, along with certification that reclaimed refrigerant contains no more than 15 percent, by weight, virgin HFCs; and (5) minimizing emissions of HFCs from certain types of fire suppression equipment.

As detailed in the RIA addendum, EPA finds that in some cases specific provisions of the proposed rule would result in compliance costs for industry, while in other cases they may result in cost savings. Provisions that result in a net cost savings may still be considered as part of the economic benefits attributable to this rule, under the assumption that these activities would not otherwise be undertaken at the same scale or rate of adoption in the absence of regulation. More discussion of these assumptions and supporting literature may be found in section 3.2.2 of the Allocation Framework Rule RIA.

From the Agency's analyses, EPA provides the costs and benefits associated with the management of regulated substances and their substitutes under the AIM Act as well those associated with the proposed amendments to the RCRA hazardous waste regulations. These analyses—as summarized below—highlight economic cost and benefits, including benefits from leak repair and emissions reductions. Given that the provisions EPA is proposing concern HFCs, which are subject to the overall phasedown of production and consumption under the AIM Act, EPA relied on its previous estimates of the impacts of already finalized AIM Act rules as a starting point for the assessment of costs and benefits of this rule. Specifically, the Allocation Framework Rule, ''Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program Under the American Innovation and Manufacturing Act'' (86 FR 55116, October 5, 2021) and the 2024 Allocation Rule, ''Phasedown of Hydrofluorocarbons: Allowance Allocation Methodology for 2024 and Later Years'' (88 FR 46836, July 20, 2023) are assumed as a baseline for this proposed rule. In this way, EPA analyzed the potential incremental impacts of the proposed rule, attributing benefits only insofar as they are additional to those already assessed in the Allocation Framework Rule RIA and the 2024 Allocation Rule RIA addendum (collectively referred to as ''Allocation Rules'' in this discussion). For example, a mitigation option in the MAC analysis for the Allocation Rules assumed a reduction in refrigerant leaks; all costs and benefits calculated for this proposed rule are for leak reductions over and above those assumed in the previous analysis. Because the proposed Technology Transitions Rule has not

been finalized as of the above analyses, those proposed restrictions are not considered part of the baseline for assessing the costs and benefits of this proposed rule.

Climate benefits presented in the RIA Addendum are based on changes (increases or reductions) in HFC emissions compared to the Allocation Framework Rule compliance case (*i.e.,* after consideration of the Allocation Framework Rule and proposed 2024 Allocation Rule) and are calculated using four different global estimates of the social cost of HFCs (SC–HFCs): the model average at 2.5 percent, 3 percent, and 5 percent discount rates and the 95th percentile at 3 percent discount rate.

EPA estimates the climate benefits for this rule using a measure of the social cost of each HFC (collectively referred to as SC–HFCs) that is affected by the rule. The SC–HFCs is the monetary value of the net harm to society associated with a marginal increase in HFC emissions in a given year, or the benefit of avoiding that increase. In principle, the SC–HFCs include the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk and natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. As with the estimates of the social cost of other GHGs, the SC–HFC estimates are found to increase over time within the models—*i.e.,* the societal harm from one metric ton emitted in 2030 is higher than the harm caused by one metric ton emitted in 2025—because future emissions produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change, and because gross domestic product (GDP) is growing over time and many damage categories are modeled as proportional to GDP. The SC–HFCs, therefore, reflects the societal value of reducing emissions of the gas in question by one metric ton. The SC–HFCs is the theoretically appropriate value to use in conducting benefit-cost analyses of policies that affect HFC emissions. See the RIA addendum for this rule and for the Allocation Framework Rule for a more detailed discussion of SC–HFCs and how they were derived.

The gas-specific SC–HFC estimates used in this analysis were developed using methodologies that are consistent with the methodology underlying estimates of the social cost of other GHGs (carbon dioxide [SC–CO_2], methane [SC–CH_4], and nitrous oxide [SC–N_2O]), collectively referred to as SC–GHG, presented in the Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 published in February 2021 by the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) (IWG 2021). As a member of the IWG involved in the development of the February 2021 SC–GHG TSD, EPA agrees that the TSD represents the most appropriate methodology for estimating the social cost of GHGs until revised estimates have been developed reflecting the latest, peer-reviewed science. Therefore, EPA views the SC–HFC estimates used in analysis to be appropriate for use in benefit-cost analysis until improved estimates of the social cost of other GHGs are developed.

EPA has developed a draft updated SC–GHG methodology within a sensitivity analysis in the regulatory impact analysis of EPA's November 2022 supplemental proposal for oil and natural gas emissions standards that is currently undergoing external peer review and a public comment process. While that process continues EPA is continuously reviewing developments in the scientific literature on the SC–GHG, including more robust methodologies for estimating damages from emissions, and looking for opportunities to further improve SC–GHG estimation going forward. Most recently, EPA presented a draft set of updated SC–GHG estimates within a sensitivity analysis in the regulatory impact analysis of EPA's December 2022 supplemental proposal for oil and gas standards that that aims to incorporate recent advances in the climate science and economics literature.[144] Specifically, the draft updated methodology incorporates new literature and research consistent with the National Academies near-term recommendations on socioeconomic and emissions inputs, climate modeling components, discounting approaches, and treatment of uncertainty, and an enhanced representation of how physical impacts of climate change translate to economic damages in the modeling framework based on the best and readily adaptable damage functions available in the peer reviewed literature. EPA solicited public comment on the sensitivity analysis and the accompanying draft technical report, which explains the methodology underlying the new set of estimates, in the docket for the proposed oil and natural gas rule. EPA is also conducting an external peer review of this technical report. More information about this process and public comment opportunities is available on EPA's website. The agency is in the process of reviewing public comments on the updated estimates within the oil and natural gas rulemaking docket as well as the recommendations of the external peer reviewers. EPA remains committed to using the best available science in its analyses. Thus, if EPA's updated SC–GHG methodology is finalized before this rule is finalized, EPA intends to present monetized climate benefits using the updated SC–GHG methodology in the final RIA.

As discussed in the February 2021 TSD, the IWG emphasized the importance and value of considering the benefits calculated using all four estimates (model average at 2.5, 3, and 5 percent discount rates, and 95th percentile at 3 percent discount rate). In addition, the TSD explained that a consideration of climate benefits calculated using discount rates below 3 percent, including 2 percent and lower, is also warranted when discounting intergenerational impacts. As a member of the IWG involved in the development of the February 2021 TSD, EPA agrees with this assessment for the purpose of estimating climate benefits from HFC reductions as well and will continue to follow developments in the literature pertaining to this issue.

B. Estimated Costs and Benefits of Leak Repair and ALD Provisions

As detailed in the RIA addendum, the number, charge sizes, leak rates, and other characteristics of potentially affected RACHP equipment were estimated using EPA's Vintaging Model.[145] The leak repair and ALD system provisions proposed are assumed to lead to leaking systems to be repaired earlier than they otherwise would have, leading to reduced emissions of HFCs. The reduction in HFC emissions results in climate benefits due to reduced climate forcing as calculated by multiplying avoided emissions by the social cost of each SC–HFC.

In the years 2025–2050, the proposed leak repair and ALD system provisions would prevent an estimated 78 $MMTCO_2e$ in HFC emissions, and the

[144] Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review (87 FR 74702, December 6, 2022).

[145] EPA. 2023. EPA's Vintaging Model representing the Allocation Framework Rule as modified by the 2024 Allocation Rule RIA Addendum. VM IO file_v4.4_02.04.16_2024 Allocation Rule.

present value of the economic benefit of avoiding the damages associated with those emissions is estimated at $5.4 billion (in 2022 dollars, discounted to 2024 using a 3 percent discount rate). The annual benefits are estimated to decrease over time due to the HFC phasedown and the transition out of the higher-GWP HFCs over time, lowering the average GWP of later emissions. For example, it is estimated that the leak repair and ALD system provisions would prevent 3.8 $MMTCO_2e$ of HFC emissions in 2030, which decreases to 2.8 $MMTCO_2e$ of HFC emissions in 2040. Table 6 shows the estimated reductions in HFC emissions for each year from 2025 to 2050 for leak repair and ALD provisions in the proposed rule.

BILLING CODE 6560–50–P

Table 6. Annual GHG Emissions Avoided in 2025 through 2050 from Leak Repair and ALD System Provisions

Year	HFC Emissions Avoided ($MTCO_2e$)
2025	3,800,000
2026	3,810,000
2027	3,820,000
2028	3,820,000
2029	3,810,000
2030	3,790,000
2031	3,780,000
2032	3,750,000
2033	3,720,000
2034	3,640,000
2035	3,510,000
2036	3,370,000
2037	3,230,000
2038	3,080,000
2039	2,930,000
2040	2,780,000
2041	2,630,000
2042	2,480,000
2043	2,330,000
2044	2,180,000
2045	2,060,000
2046	1,970,000
2047	1,900,000
2048	1,860,000
2049	1,850,000
2050	1,860,000

Reducing HFC emissions due to fixing leaks earlier would also be anticipated to lead to savings for system owner/operators, as less new refrigerant would need to be purchased to replace leaked refrigerant. In 2025, it is estimated that the proposed leak repair and ALD system provisions would lead to savings of approximately $13 million (2022$).

Unlike the climate benefits, these savings would not be expected to decrease over time, as the cost of refrigerant would not decrease with the average GWP.

The compliance costs of the proposed leak repair and inspection requirements include the costs of purchasing and operating ALD systems, costs of required inspections, and the cost of repairing leaks earlier than would have been necessary without the proposed provisions. In the years 2025–2050, these proposed provisions would result in compliance costs with a present value estimated at $3.6 billion (2022 dollars, discounted to 2024 at a 3 percent discount rate). When combined with the refrigerant savings, the estimated present value of 2025–2050 net compliance costs would be $3.4 billion. Table 7 shows the estimated compliance costs, including refrigerant savings, for each year 2025–2050, as well as the total net costs discounted to 2024 and the equivalent annual costs using discount rates of 3 percent and 7 percent.

Table 7. Incremental Annual Compliance Costs from Leak Repair and ALD System Provisions (2022$)

Year	Total Incremental Compliance Costs	Refrigerant Savings	Total Incremental Compliance Costs Minus Refrigerant Savings
2025	$278,400,000	$13,100,000	$265,300,000
2026	$219,100,000	$13,400,000	$205,700,000
2027	$229,900,000	$13,600,000	$216,300,000
2028	$242,700,000	$13,700,000	$229,000,000
2029	$250,000,000	$13,900,000	$236,100,000
2030	$190,600,000	$13,900,000	$176,700,000
2031	$191,900,000	$14,000,000	$177,900,000
2032	$192,700,000	$14,000,000	$178,700,000
2033	$193,600,000	$14,000,000	$179,600,000
2034	$194,300,000	$13,900,000	$180,400,000
2035	$194,500,000	$13,700,000	$180,800,000
2036	$194,600,000	$13,400,000	$181,200,000
2037	$195,200,000	$13,100,000	$182,100,000
2038	$195,700,000	$12,800,000	$182,900,000
2039	$196,100,000	$12,500,000	$183,600,000
2040	$196,500,000	$12,200,000	$184,300,000
2041	$196,800,000	$11,900,000	$184,900,000
2042	$197,100,000	$11,600,000	$185,500,000
2043	$197,300,000	$11,200,000	$186,100,000
2044	$197,500,000	$10,900,000	$186,600,000
2045	$197,800,000	$10,600,000	$187,200,000
2046	$198,400,000	$10,300,000	$188,100,000
2047	$199,200,000	$10,200,000	$189,000,000
2048	$200,300,000	$10,100,000	$190,200,000
2049	$201,600,000	$10,100,000	$191,500,000
2050	$203,300,000	$10,200,000	$193,100,000

Discount Rate	3%	7%
NPV	$3,395,000,000	$2,203,000,000
EAV	$196,000,000	$199,000,000

C. Summary of Estimated Costs and Benefits of All Rule Provisions

As discussed above, the HFC Allocation Framework Rule serves as the status quo from which incremental impacts of the proposed rule are evaluated. EPA assumes that under the HFC allowance trading mechanism promulgated under the Allocation Framework Rule, one possible result of some of the proposed provisions in this rule is that industry will maximize the use of allowances still available to meet remaining demand for HFC production and consumption in a given year. Therefore, provisions in this rule requiring the use of reclaimed HFCs for refrigerant-containing equipment in certain RACHP subsectors and recycled HFCs in fire suppression equipment may not yield significant additional HFC consumption reductions, relative to what was previously modeled in the Allocation Framework Rule Reference Case. For example, if additional reclaimed HFCs are utilized in the commercial refrigeration subsector, industry may still shift the use of available consumption and production allowances to import or produce HFCs to meet demand for other subsectors that are not covered by a reclaim requirement. However, the extent of such offsetting effects is uncertain.

To account for this uncertainty, this analysis provides two scenarios to illustrate the range of potential incremental impacts. In our base case scenario, we conservatively estimate that abatement from provisions in this rule may be offset by additional HFC consumption in subsectors not covered by this rule, even if these subsectors were previously assumed to have consumption abatement in the Allocation Rule Reference Case. To illustrate the potential upper bound incremental benefits of the proposed rule, we then provide a ''high additionality'' case, in which abatement in these additional subsectors is included.

The present value of the net benefits of this proposed rule are equal to the sum of the net costs or benefits of the various provisions in each year 2025–2050, discounted to 2024. These estimates are provided by each rule provision in Table 8 below. The provisions which contribute to the total net benefits are those covering leak inspections, leak repair, recordkeeping and reporting, reduced emissions and use of recycled HFCs in the fire suppression sector, management and ultimate evacuation of disposable cylinders and tracking provisions for disposable and refillable cylinders, and the required use of reclaimed HFCs in the initial charging and service of certain appliances.

The use of recycled/reclaimed HFCs was already anticipated as a path to compliance with the HFC phasedown consumption caps in the analysis of the Allocation Framework Rule, but the specific provisions of this proposed rule would likely increase the use of recycled/reclaimed HFCs beyond what was already accounted for in that RIA. To the extent this additional use of recycled/reclaimed HFCs displaces consumption of virgin HFCs either (a) the reduced consumption of virgin HFCs in one sector would free up allocation allowances that would then be used elsewhere for consumption of HFCs, or (b) the reduction in the consumption of virgin HFCs would result in incremental climate benefits under this proposed rule. The former scenario is presented as part of the base case and the latter as part of the high additionality case for the net benefits in in Table 8.

Table 8. Present Value and Equivalent Annual Value of Rule Provisions 2025–2050 in Base Case and High Additionality Scenarios [a,b]

		Base Case Net Benefits 2025–2050 (millions 2022$)		High Additionality Case Net Benefits 2025–2050 (millions 2022$)	
Rule Provisions	Costs Discount Rate	3%	7%	3%	7%
Leak Repair, Leak Inspection,& ALD	NPV	$1,964	$3,156	$1,964	$3,156
	EAV	$113	$109	$113	$109
Fire Suppression	NPV	$0	$0	$337	$338
	EAV	$0	$0	$18	$18
Cylinder Management	NPV	$4,453	$4,457	$4,453	$4,457
	EAV	$257	$256	$257	$256
Required Use of Reclaim	NPV	$0	$0	$251	$256
	EAV	$0	$0	$14	$14
Recordkeeping and Reporting	NPV	($298)	($186)	($298)	($186)
	EAV	($17)	($17)	($17)	($17)
TOTAL (AIM Act)	NPV	$6,120	$7,427	$6,708	$8,021
	EAV	$353	$349	$385	$381
RCRA Amendments	NPV	$0–$1.6	$0–$1.0	$0–$1.6	$0–$1.0
	EAV	$0–$0.1	$0–$0.1	$0–$0.1	$0–$0.1
TOTAL (AIM Act + RCRA)	NPV	$6,120-$6,122	$7,427-$7,428	$6,708-$6,710	$8,021-$8,022
	EAV	$353-$353	$349-$349	$385-$385	$381-$381

a. Values representing costs are shown in parentheses.
b. Totals may not sum due to independent rounding.

BILLING CODE 6450–01–C

VII. How is EPA considering environmental justice?

Executive Order 12898 (59 FR 7629, February 16, 1994) and Executive Order 14008 (86 FR 7619, January 27, 2021) establish federal executive policy on environmental justice. Executive Order 14096, signed April 21, 2023, builds on the prior Executive Orders to further advance environmental justice (88 FR 25251).

Executive Order 12898's 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 or environmental effects of their programs, policies, and activities on people of color and low-income populations in the United States. EPA defines [146] environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.[147] Meaningful involvement means that: (1) potentially affected populations have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/

[146] EPA recognizes that E.O. 14096 (88 FR 25251, April 21, 2023) provides a new terminology and a new definition for environmental justice, as follows: ''the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people: (i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and (ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.'' For additional information, see *https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all.*

[147] See, *e.g.,* Environmental Protection Agency. ''*Environmental Justice.*'' Available at: *https://www.epa.gov/environmentaljustice.*

or health; (2) the public's contribution can influence the regulatory Agency's decision; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the rule-writers and decision-makers seek out and facilitate the involvement of those potentially affected.[148] The term ''disproportionate impacts'' refers to differences in impacts or risks that are extensive enough that they may merit Agency action. In general, the determination of whether there is a disproportionate impact that may merit Agency action is ultimately a policy judgment which, while informed by analysis, is the responsibility of the decision-maker. The terms ''difference'' or ''differential'' indicate an analytically discernible distinction in impacts or risks across population groups. It is the role of the analyst to assess and present differences in anticipated impacts across population groups of concern for both the baseline and proposed regulatory options, using the best available information (both quantitative and qualitative) to inform the decision-maker and the public.[149]

Executive Order 14008 calls on agencies to make achieving environmental justice part of their missions ''by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.'' Executive Order 14008 further declares a policy ''to secure environmental justice and spur economic opportunity for disadvantaged communities that have been historically marginalized and overburdened by pollution and under-investment in housing, transportation, water and wastewater infrastructure, and health care.''

In addition, the Presidential Memorandum on Modernizing Regulatory Review calls for procedures to ''take into account the distributional consequences of regulations, including as part of a quantitative or qualitative analysis of the costs and benefits of regulations, to ensure that regulatory initiatives appropriately benefit, and do not inappropriately burden disadvantaged, vulnerable, or marginalized communities.'' [150] EPA also released its June 2016 ''Technical Guidance for Assessing Environmental Justice in Regulatory Analysis'' (2016 Technical Guidance) to provide recommendations that encourage analysts to conduct the highest quality analysis feasible, recognizing that data limitations, time and resource constraints, and analytic challenges will vary by media and circumstance.[151]

For this action, EPA conducted an environmental justice analysis [152] using a methodology similar to that we used as part of the Allocation Framework Rule (86 FR 55116, October 5, 2021). The information provided in this section is for informational purposes only; EPA is not relying on the information in this section as a record basis for this proposed action. Following the analytical approach used in the Allocation Framework Rule RIA, EPA has provided demographic data and the cancer and respiratory risks to surrounding communities. This update includes the most recent data available for the AirToxScreen dataset from 2020.

The analysis shows that communities near the nineteen identified HFC reclamation facilities are generally more diverse than the national average with respect to race and ethnicity. While the median income of these communities is slightly higher than the national average, there are more low-income households. Across the nineteen facilities, total respiratory risk and total cancer risk are lowest for the communities nearest the reclamation sites. While the total respiratory index for communities within one mile of these nineteen facilities are slightly higher (.32 compared to the national average of .31), the risk for those closest to the facilities appears smaller than for those at greater distances (3-, 5-, and 10-mile radii).

This rule is expected to result in benefits in the form of reduced GHG emissions. The analysis conducted for this rule also estimates that a portion of these benefits would be incremental to emissions reductions that were anticipated under the Allocation Framework Rule alone, thus further reducing the risks of climate change.

While providing additional overall climate benefits, this rule may also result in changes in emissions of air pollutants or other chemicals which are potential byproducts of HFC reclamation processes at affected facilities. The market for reclaimed HFCs could drive changes in potential risk for communities living near these facilities, but the changes in emissions that could have local effects are uncertain. However, the nature and location of the emission changes are uncertain. Moreover, there is insufficient information at this time about which facilities will change reclamation processes. Given limited information at this time, it is unclear to what extent this rule will impact existing disproportionate adverse effects on communities living near HFC reclamation facilities.[153] The Agency will continue to evaluate the impacts of this proposed rulemaking on communities with environmental justice concerns and consider further action, as appropriate, to protect health in communities affected by HFC reclamation. While the environmental justice analysis was conducted for informational purposes only, EPA welcomes the public's input on the environmental justice analysis contained in the RIA addendum for this proposed rule, as well as broader input

[148] The criteria for meaningful involvement are contained in EPA's May 2015 document ''*Guidance on Considering Environmental Justice During the Development of an Action.*'' Environmental Protection Agency, 17 Feb. 2017. Available at: *https://www.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action.*

[149] The definitions and criteria for ''disproportionate impacts,'' ''difference,'' and ''differential'' are contained in EPA's June 2016 document ''Technical Guidance for Assessing Environmental Justice in Regulatory Analysis.'' Available at: *https://www.epa.gov/environmentaljustice/technical-guidance-assessing-environmental-justice-regulatory-analysis.*

[150] Presidential Memorandum on Modernizing Regulatory Review, January 20, 2021. Available at: *https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/modernizing-regulatory-review/.*

[151] Technical Guidance for Assessing Environmental Justice in Regulatory Analysis, June 2016. Available at: *https://www.epa.gov/sites/default/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf.*

[152] EPA recognizes that new terminology and a new definition for environmental justice were established in E.O. 14096 (88 FR 25251, April 21, 2023). When the analysis of this proposed rule was performed, EPA was operating under prior guidance available here: *https://www.epa.gov/sites/default/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf.*

[153] Statements made in this section on the environmental justice analysis draw support from the following citations: Banzhaf, Spencer, Lala Ma, and Christopher Timmins. 2019. Environmental justice: The economics of race, place, and pollution. Journal of Economic Perspectives; Hernandez-Cortes, D. and Meng, K.C., 2020. Do environmental markets cause environmental injustice? Evidence from California's carbon market (No. w27205). NBER; Hu, L., Montzka, S.A., Miller, B.R., Andrews, A.E., Miller, J.B., Lehman, S.J., Sweeney, C., Miller, S.M., Thoning, K., Siso, C. and Atlas, E.L., 2016. Continued emissions of carbon tetrachloride from the United States nearly two decades after its phaseout for dispersive uses. Proceedings of the National Academy of Sciences; Mansur, E. and Sheriff, G., 2021. On the measurement of environmental inequality: Ranking emissions distributions generated by different policy instruments.; U.S. EPA. 2011. Plan EJ 2014. Washington, DC: U.S. EPA, Office of Environmental Justice.; U.S. EPA. 2015. Guidance on Considering Environmental Justice During the Development of Regulatory Actions. May 2015.; USGCRP. 2016. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. U.S. Global Change Research Program, Washington, DC.

on other health and environmental risks the Agency should assess.

VIII. Request for Advance Comment on Approaches for Establishing Requirements for Technician Training

For purposes of ensuring the safety of technicians and consumers, subsection (h)(1) directs EPA to promulgate regulations to control, where appropriate, any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment that involves: a regulated substance, a substitute for a regulated substance, the reclaiming of a regulated substance used as a refrigerant, or the reclaiming of a substitute for a regulated substance used as a refrigerant (42 U.S.C. 7675(h)(1)). Subsection (h)(1) further provides that this includes requiring, where appropriate, that any such servicing, repair, disposal, or installation be performed by a trained technician meeting minimum standards, as determined by EPA.

As discussed above in section III.C., regulations issued under CAA section 608 for managing stationary refrigeration and air conditioning appliances include, among other things, technician certification requirements (40 CFR 82.161). Additionally, regulations issued under CAA section 609 currently requires that anyone servicing or repairing an MVAC system for consideration must be properly trained and certified (40 CFR 82.34(a)(2)). However, since establishing these regulatory programs in the 1990s, the use of flammable or mildly flammable refrigerants have increased.[154] [155]

EPA is aware that many innovative technologies are being introduced to continue to meet the air conditioning and refrigeration needs in the United States and around the world. Typically, newer equipment meets higher efficiency standards. For many applications, there has been and likely will continue to be an increased use of flammable and mildly flammable refrigerants. While these refrigerants can be safely used in equipment properly designed for their use, it is not advisable to use these refrigerants in equipment specifically designed for non-flammable refrigerants. Previously, when listing certain flammable refrigerants for specific end-uses as acceptable subject to use conditions under the SNAP program, EPA took advance comment on a requirement for training (85 FR 35874, June 12, 2020). EPA is also aware that many entities, including equipment manufacturers, trade associations, unions, trade schools, and other organizations provide training for technicians and many offer specific training for refrigerants designated by ASHRAE as 2, 2L, and 3.

EPA requests advance comment on whether the Agency should establish requirements for RACHP technician training and/or certification to address servicing equipment using ASHRAE 2, 2L, and 3 refrigerants, and if so, potential approaches for doing so. EPA is particularly seeking advance comment on whether through a separate rulemaking, EPA should propose to establish training and/or certification requirements for technicians under subsection (h), and, if so, how such a training and/or certification program might be managed, and to what extent or for which types of HFCs and/or their substitutes such requirements should apply. EPA is also requesting advance comment on whether technicians who are currently trained and certified under CAA sections 608 (for servicing of stationary refrigeration appliances) and/or CAA section 609 (for servicing of MVAC systems) should be required to be certified under subsection (h) of the AIM Act, and whether any future technician training requirements should also be incorporated into the proposed RCRA 40 CFR part 266, subpart Q requirements for ignitable spent refrigerants being recycled for reuse, or if the Agency should provide grandfathering for technicians certified by an approved CAA section 608 or 609 certifier. EPA is not proposing and will not be finalizing a technician training and certifying program on which it is seeking advance comment as part of this rulemaking. Accordingly, EPA does not intend to respond to any advance information received on the options discussed in these sections in any final rulemaking for this proposal. However, EPA will consider those comments as part of a potential future notice and comment rulemaking to establish a training and/or certification program.

IX. Statutory and Executive Order Review

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 14094: Modernizing Regulatory Review

This action is a ''significant regulatory action'', as defined under section 3(f)(1) of Executive Order 12866, as amended by Executive Order 14094. Accordingly, EPA, submitted this action to the Office of Management and Budget (OMB) for Executive Order 12866 review. Documentation of any changes made in response to the Executive Order 12866 review is available in the docket. EPA prepared an analysis of the potential costs and benefits associated with this action. This analysis, *Draft Regulatory Impact Analysis Addendum: Analysis of the Economic Impact and Benefits of the Proposed Rule: American Innovation and Manufacturing (AIM) Act Subsection H Management of Regulated Substances,* is available in the docket for this action (Docket Number EPA–HQ–OAR–2022–0606) and is summarized in section I.C. and section VI. of this preamble.

B. Paperwork Reduction Act (PRA)

The information collection activities in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the PRA. The Information Collection Request (ICR) document that EPA prepared has been assigned EPA ICR number 2778.01. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here.

Subsection (k)(1)(C) of the AIM Act states that section 114 of the CAA applies to the AIM Act and rules promulgated under it as if the AIM Act were included in title VI of the CAA. Thus, section 114 of the Clean Air Act, which provides authority to EPA Administrator to require recordkeeping and reporting in carrying out provisions of the CAA, also applies to and supports this rulemaking.

EPA is proposing certain data collection for registration in the tracking system for containers of HFC refrigerants as well as HFC fire suppression agents that could be used in the servicing, repair, and/or installation of refrigerant-containing or fire suppression equipment in order to encourage compliance and aid enforcement. Separately, EPA is proposing certain labeling requirements for containers of reclaimed HFCs. EPA is also proposing recordkeeping and reporting requirements for owners or operators of applicable refrigerant-containing appliances that contain HFCs

[154] TEAP 2022 Progress Report (May 2022) and 2018 Quadrennial Assessment Report. Available online at: *https://ozone.unep.org/science/assessment/teap.*

[155] Volume 3: Decision XXXIII/5—Continued provision of information on energy-efficient and low-global-warming-potential technologies, Technological and Economic Assessment Panel, United Nations Environment Programme (UNEP), May 2022. Available online at: *https://ozone.unep.org/system/files/documents/TEAP-EETF-report-may-2022.pdf.*

or their substitutes to support compliance with the leak repair provisions, as well as recordkeeping and reporting requirements for the proposed fire suppression provisions for HFCs. Additionally, where ALD systems are required, EPA is proposing that owners or operators maintain records regarding the annual calibration or audit of the system.

Respondents/affected entities: Respondents and affected entities will be individuals or companies that own, operate, service, repair, recycle, dispose, or install equipment containing HFCs or their substitutes addressed by this proposed rule, as well as individuals or companies that recover, recycle, or reclaim HFCs or their substitutes.

Respondent's obligation to respond: Mandatory (AIM Act and section 114 of the CAA).

Estimated number of respondents: 851,304.

Frequency of response: Quarterly, annually, and as needed depending on the nature of the report.

Total estimated burden: 223,432 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: $15,966,834 (per year), includes annualized capital or operation and maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to EPA using the docket identified at the beginning of this rule. EPA will respond to any ICR-related comments in the final rule. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs using the interface at *https://www.reginfo.gov/public/do/PRAMain.* Find this particular information collection by selecting ''Currently under Review—Open for Public Comments'' or by using the search function. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than November 20, 2023.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities (SISNOSE) under the RFA. The small entities subject to the requirements of this action include those that may use as refrigerant, use as a fire suppression agent, reclaim, or recycle HFCs. EPA estimates that approximately 896 of the 176,042 potentially affected small entities could incur costs in excess of one percent of annual sales/revenue and that approximately 70 small entities could incur costs in excess of three percent of annual sales/revenue. Because there is not a substantial number of small entities that may experience a significant impact, it can be presumed that this action will have no SISNOSE. Details of this analysis are presented in Appendix H of ''Analysis of the Economic Impact and Benefits of the Proposed Rule: American Innovation and Manufacturing (AIM) Act Subsection H Management of Regulated Substances.'' (Docket ID EPA–HQ–OAR–2022–0606).

D. Unfunded Mandates Reform Act (UMRA)

This action contains a federal mandate under UMRA, 2 U.S.C. 1531–1538, 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. Accordingly, EPA has prepared a written statement required under section 202 of UMRA. The statement is included in the docket for this action and briefly summarized here. This action contains a federal mandate that may result in expenditures that exceed the inflation-adjusted UMRA threshold of $100 million by the private sector in any one year, but it is not expected to result in expenditures of this magnitude by state, local, and Tribal governments in the aggregate. The rule is estimated to result in average annual cost to the private sector of $228 million for the period 2025 through 2050. When adjusted for inflation, the $100 million UMRA threshold established in 1995 is equivalent to approximately $184 million in 2022 dollars, the year dollars for the cost estimates in this proposed rule. Thus, the cost of the rule to the private sector in the aggregate exceeds the inflation-adjusted UMRA threshold.

This action is not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

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.

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

This action does not have Tribal implications as specified in Executive Order 13175. It will not have substantial direct effects on Tribal governments, on the relationship between the Federal government and Indian Tribes, or on the distribution of power and responsibilities between the Federal government and Indian Tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this action. EPA periodically updates Tribal officials on air regulations through the monthly meetings of the National Tribal Air Association and will share information on this rulemaking through this and other fora.

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

Executive Order 13045 directs federal agencies to include an evaluation of the health and safety effects of the planned regulation on children in federal health and safety standards and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives. This action is subject to Executive Order 13045 because it is a significant regulatory action under section 3(f)(1) of Executive Order 12866, and EPA believes that the environmental health or safety risk addressed by this action has a disproportionate effect on children. Accordingly, we have evaluated the environmental health or safety effects of climate change on children.

GHGs, including HFCs, contribute to climate change. The GHG emissions reductions resulting from implementation of this rule will further improve children's health. The assessment literature cited in EPA's 2009 and 2016 Endangerment Findings concluded that certain populations and life stages, including children, the elderly, and the poor, are most vulnerable to climate-related health effects. The assessment literature since 2016 strengthens these conclusions by providing more detailed findings regarding these groups' vulnerabilities and the projected impacts they may experience.

These assessments describe how children's unique physiological and developmental factors contribute to making them particularly vulnerable to climate change. Impacts to children are expected from heat waves, air pollution,

infectious and waterborne illnesses, and mental health effects resulting from extreme weather events. In addition, children are among those especially susceptible to most allergic diseases, as well as health effects associated with heat waves, storms, and floods. Additional health concerns may arise in low-income households, especially those with children, if climate change reduces food availability and increases prices, leading to food insecurity within households. More detailed information on the impacts of climate change to human health and welfare is provided in section III.B. of this preamble.

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

This action is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This action applies to certain regulated substances and certain applications containing regulated substances, none of which are used to supply or distribute energy.

I. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All

EPA believes that the human health or environmental conditions that exist prior to this action result in or have the potential to result in disproportionate and adverse human health or environmental effects on communities with environmental justice concerns. EPA carefully evaluated available information on HFC reclamation facilities and the characteristics of nearby communities to evaluate these impacts in the context of this proposed rulemaking. Based on this analysis, EPA finds evidence of environmental justice concerns near HFC reclamation facilities from cumulative exposure to existing environmental hazards in these communities.

The analysis shows that communities near the nineteen identified HFC reclamation facilities are generally more diverse than the national average with respect to race and ethnicity. While the median income of these communities is slightly higher than the national average, there are more low-income households. Across the nineteen facilities, total respiratory risk and total cancer risk are lowest for the communities nearest the reclamation sites. While the cancer risk within 1-mile of the facilities is lower than the national average, the cancer and respiratory risks are otherwise slightly elevated compared to the average.

This rule is expected to result in benefits in the form of reduced GHG emissions. The analysis conducted for this rule also estimates that a portion of these benefits would be incremental to emissions reductions that were anticipated under the Allocation Framework Rule alone, thus further reducing the risks of climate change.

While providing additional overall climate benefits, this rule may also result in changes in emissions of air pollutants or other chemicals which are potential byproducts of HFC reclamation processes at affected facilities. The market for reclaimed HFCs could drive changes in potential risk for communities living near these facilities due to the changes in emissions that could have local effects is uncertain. However, the nature and location of the emission changes are uncertain. Moreover, there is insufficient information at this time about which facilities will change reclamation processes. Given limited information at this time, it is unclear to what extent this rule will impact existing disproportionate adverse effects on communities living near HFC reclamation facilities. The Agency will continue to evaluate the impacts of this proposed rulemaking on communities with environmental justice concerns and consider further action, as appropriate, to protect health in communities affected by HFC reclamation. The information supporting this Executive Order review is contained in section VII. of this preamble.

List of Subjects

40 CFR Part 84

Environmental protection, Administrative practice and procedure, Air pollution control, Chemicals, Climate change, Emissions, Reclaiming, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 261

Environmental protection, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 262

Environmental protection, Exports, Hazardous materials transportation, Hazardous waste, Imports, Labeling, Packaging and containers, Reporting and recordkeeping requirements.

40 CFR Part 266

Environmental protection, Energy, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 270

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Reporting and recordkeeping requirements, Water pollution control, Water supply.

40 CFR Part 271

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indians—lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

Michael S. Regan,

Administrator.

For the reasons stated in the preamble, EPA proposes to amend 40 CFR parts 84, 261, 262, 266, 270, and 271 as follows:

PART 84—PHASEDOWN OF HYDROFLUOROCARBONS

■ 1. The authority citation for part 84 continues to read as follows:

Authority: Pub. L. 116–260, Division S, Sec. 103.

■ 2. Add to part 84, subpart C consisting of §§ 84.100 through 84.124 to read as follows:

Subpart C—Management of Regulated Substances

Sec.

§ 84.100 Purpose.

The purpose of the regulations in this subpart is to implement subsection (h) of 42 U.S.C. 7675, with respect to

controls for any practice, process, or activity regarding the servicing, repair, disposal, or installation of equipment, for purposes of maximizing reclaiming, minimizing the release of regulated substances from equipment, and ensuring the safety of technicians and consumers.

§ 84.102 Definitions.

For the terms not defined in this subpart but that are defined in § 84.3, the definitions in § 84.3 shall apply. For the purposes of this subpart C:

Certified technician means a technician that has been certified per the provisions at 40 CFR 82.161.

Comfort cooling means the refrigerant-containing appliances used for air conditioning to provide cooling in order to control heat and/or humidity in occupied facilities including but not limited to residential, office, and commercial buildings. Comfort cooling appliances include but are not limited to chillers, commercial split systems, and packaged roof-top units.

Commercial refrigeration means the refrigerant-containing appliances used in the retail food and cold storage warehouse subsectors. Retail food appliances include the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the refrigeration equipment used to store meat, produce, dairy products, and other perishable goods.

Component, as it relates to a refrigerant-containing appliance, means a part of the refrigerant circuit within an appliance including, but not limited to, compressors, condensers, evaporators, receivers, and all of its connections and subassemblies.

Custom-built means that the industrial process refrigeration equipment or any of its components cannot be purchased and/or installed without being uniquely designed, fabricated and/or assembled to satisfy a specific set of industrial process conditions.

Disposal, as it relates to a refrigerant-containing appliance, means the process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded refrigerant-containing appliance into or on any land or water;

(2) The disassembly of any refrigerant-containing appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water;

(3) The vandalism of any refrigerant-containing appliance such that the refrigerant is released into the environment or would be released into the environment if it had not been recovered prior to the destructive activity;

(4) The disassembly of any refrigerant-containing appliance for reuse of its component parts; or

(5) The recycling of any refrigerant-containing appliance for scrap.

Equipment means any device that contains, uses, detects or is otherwise connected or associated with a regulated substance or substitute for a regulated substance, including any refrigerant-containing appliance, component, or system.

Fire suppression equipment means any device that is connected to or associated with a regulated substance or substitute for a regulated substance, including blends and mixtures, consisting in part or whole of a regulated substance or a substitute for a regulated substance, and that is used for fire suppression purposes. This term includes and such equipment, component, or system. This term does not include mission-critical military end uses and systems used in deployable and expeditionary situations. This term also does not include space vehicles as defined in 40 CFR 84.3.

Fire suppression technician means any person who in the course of servicing, repair, disposal, or installation of fire suppression equipment could be reasonably expected to violate the integrity of the fire suppression equipment and therefore release fire suppressants into the environment.

Follow-up verification test, as it relates to a refrigerant-containing appliance, means those tests that involve checking the repairs to an appliance after a successful initial verification test and after the appliance has returned to normal operating characteristics and conditions to verify that the repairs were successful. Potential methods for follow-up verification tests include, but are not limited to, the use of soap bubbles as appropriate, electronic or ultrasonic leak detectors, pressure or vacuum tests, fluorescent dye and black light, infrared or near infrared tests, and handheld gas detection devices.

Full charge, as it relates to a refrigerant-containing appliance, means the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

(1) Use of the equipment manufacturer's determination of the full charge;

(2) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;

(3) Use of actual measurements of the amount of refrigerant added to or evacuated from the appliance, including for seasonal variances; and/or

(4) Use of an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge.

Industrial process refrigeration means complex customized refrigerant-containing appliances that are directly linked to the processes used in, for example, the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.

Initial verification test, as it relates to a refrigerant-containing appliance, means those leak tests that are conducted after the repair is finished to verify that a leak or leaks have been repaired before refrigerant is added back to the appliance.

Installation means the process of setting up equipment for use, which may include steps such as completing the refrigerant circuit, including charging equipment with a regulated substance or substitute for a regulated substance, or connecting cylinders containing a regulated substance or a substitute for a regulated substance to a total flooding fire suppression system, such that the equipment can function and is ready for use for its intended purpose.

Leak inspection, as it relates to a refrigerant-containing appliance, means the examination of an appliance to detect and determine the location of refrigerant leaks. Potential methods include, but are not limited to, ultrasonic tests, gas-imaging cameras, bubble tests as appropriate, or the use of a leak detection device operated and maintained according to manufacturer guidelines. Methods that determine whether the appliance is leaking refrigerant but not the location of a leak, such as standing pressure/vacuum decay tests, sight glass checks, viewing receiver levels, pressure checks, and charging charts, must be used in

conjunction with methods that can determine the location of a leak.

Leak rate, as it relates to a refrigerant-containing appliance, means the rate at which an appliance is losing refrigerant, measured between refrigerant charges. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate must be calculated using one of the following methods. The same method must be used for all appliances subject to the leak repair requirements located at an operating facility.

(1) Annualizing Method.

(i) *Step 1.* Take the number of pounds of refrigerant added to the appliance to return it to a full charge, whether in one addition or if multiple additions related to same leak, and divide it by the number of pounds of refrigerant the appliance normally contains at full charge;

(ii) *Step 2.* Take the shorter of the number of days that have passed since the last day refrigerant was added or 365 days and divide that number by 365 days;

(iii) *Step 3.* Take the number calculated in Step 1 and divide it by the number calculated in Step 2; and

(iv) *Step 4.* Multiply the number calculated in Step 3 by 100 to calculate a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365\ \textit{days/year}}{\textit{shorter of:}\ \#\ \text{days since refrigerant last added or 365 days}} \times 100\%$$

(2) Rolling Average Method.

(i) *Step 1.* Take the sum of the pounds of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year);

(ii) *Step 2.* Divide the result of Step 1 by the pounds of refrigerant the appliance normally contains at full charge; and

(iii) *Step 3.* Multiply the result of Step 2 by 100 to obtain a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added over past 365 days (or since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year)}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

Mothball, as it relates to a refrigerant-containing appliance, means to evacuate refrigerant from an appliance, or the affected isolated section or component of an appliance, to at least atmospheric pressure, and to temporarily shut down that appliance.

Motor vehicle, as used in this subpart, means any vehicle which is self-propelled and designed for transporting persons or property on a street or highway, including but not limited to passenger cars, light-duty vehicles, and heavy-duty vehicles. This definition does not include a vehicle where final assembly of the vehicle has not been completed by the original equipment manufacturer.

Motor vehicle air conditioners (MVAC) means mechanical vapor compression refrigerant-containing appliances used to cool the driver's or passenger's compartment of any motor vehicle. This definition is intended to have the same meaning as defined in 40 CFR 82.32.

MVAC-like appliance means a mechanical vapor compression, open-drive compressor refrigerant-containing appliance with a full charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of off-road vehicles or equipment. This includes, but is not limited to, the air-conditioning equipment found on agricultural or construction vehicles. This definition is intended to have the same meaning as defined in 40 CFR 82.152.

Normal operating characteristics and conditions, as it relates to a refrigerant-containing appliance, means appliance operating temperatures, pressures, fluid flows, speeds, and other characteristics, including full charge of the appliance, that would be expected for a given process load and ambient condition during normal operation. Normal operating characteristics and conditions are marked by the absence of atypical conditions affecting the operation of the appliance.

Owner or operator means any person who owns, leases, operates, or controls any equipment or who controls or supervises any practice, process, or activity that is subject to any requirement pursuant to this subpart.

Recover means the process by which a regulated substance, or where applicable, a substitute for a regulated substance, is removed, in any condition, from equipment; and stored in an external container, with or without testing or processing the regulated substance or substitute for a regulated substance.

Recycling, when referring to fire suppression or fire suppressants, means the testing and/or reprocessing of regulated substances used in the fire suppression sector to certain purity standards.

Refrigerant, for purposes of this subpart, means any substance, including blends and mixtures, consisting in part or whole of a regulated substance or a substitute for a regulated substance that is used for heat transfer purposes, including those that provide a cooling effect.

Refrigerant circuit, as it relates to a refrigerant-containing appliance, means the parts of an appliance that are normally connected to each other (or are separated only by internal valves) and are designed to contain refrigerant.

Refrigerant-containing appliance means any device that contains and uses a regulated substance or substitute for a regulated substance as a refrigerant including any air conditioner, motor vehicle air conditioner, refrigerator,

chiller, or freezer. For a system with multiple circuits, each independent circuit is considered a separate appliance.

Refrigerant-containing equipment means equipment as defined in this subpart that contains, uses, or is otherwise connected or associated with a regulated substance or substitute for a regulated substance that is used as a refrigerant. This definition includes refrigerant-containing components, refrigerant-containing appliances, and MVAC-like appliances. This term does not include mission-critical military end uses and systems used in deployable and expeditionary situations. This term also does not include space vehicles as defined in 40 CFR 84.3.

Repackager means an entity who transfers regulated substances, either alone or in a blend, from one container to another container prior to sale or distribution or offer for sale or distribution. An entity that services system cylinders for use in fire suppression equipment and returns the same regulated substances to the same system cylinder it was recovered from after the system cylinder is serviced is not a repackager.

Repair, for purposes of this subpart and as it relates to a particular leak in a refrigerant-containing appliance, means making adjustments or other alterations to that refrigerant-containing appliance that have the effect of stopping leakage of refrigerant from that particular leak.

Reprocess means using procedures, such as filtering, drying, distillation and other chemical procedures to remove impurities from a regulated substance or a substitute for a regulated substance.

Retire, as it relates to a refrigerant-containing appliance, means the removal of the refrigerant and the disassembly or impairment of the refrigerant circuit such that the appliance as a whole is rendered unusable by any person in the future.

Retrofit, as it relates to a refrigerant-containing appliance, means to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components. Retrofits required under this subpart shall be done to a refrigerant with a lower global warming potential.

Seasonal variance, as it relates to a refrigerant-containing appliance, means the removal of refrigerant from an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent addition of an amount that is less than or equal to the amount of refrigerant removed in the prior change in season, where both the removal and addition of refrigerant occurs within one consecutive 12-month period.

Stationary refrigerant-containing equipment means refrigerant-containing equipment, as defined in this subpart, that is not a motor vehicle air conditioner or an MVAC-like appliance, as defined in this subpart.

Substitute for a regulated substance means a substance that can be used in equipment in the same or similar applications as a regulated substance, to serve the same or a similar purpose, including but not limited to a substance used as a refrigerant in a refrigerant-containing appliance or as a fire suppressant in fire suppression equipment, provided that the substance is not a regulated substance or an ozone-depleting substance.

Technician, as it relates to any person who works with refrigerant-containing appliances, means any person who in the course of servicing, repair, or installation of a refrigerant-containing appliance (except MVACs) could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants into the environment. Technician also means any person who in the course of disposal of a refrigerant-containing appliance (except small appliances as defined in 40 CFR 82.152, MVACs, and MVAC-like appliances) could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants from the appliances into the environment. Activities reasonably expected to violate the integrity of the refrigerant circuit include but are not limited to: Attaching or detaching hoses and gauges to and from the appliance; adding or removing refrigerant; adding or removing components; and cutting the refrigerant line. Activities such as painting the appliance, rewiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts are not reasonably expected to violate the integrity of the refrigerant circuit. Activities conducted on refrigerant-containing appliances that have been properly evacuated pursuant to 40 CFR 82.156 are not reasonably expected to release refrigerants unless the activity includes adding refrigerant to the appliance. Technicians could include but are not limited to installers, contractor employees, in-house service personnel, and owners and/or operators of refrigerant-containing appliances.

Virgin regulated substance means any regulated substance that has not had any bona fide use in equipment except for those regulated substances contained in the heel or the residue of a container that has had a bona fide use in the servicing, repair, or installation of equipment.

§ 84.104 Prohibitions.

(a) *Sale of recovered refrigerant.* No person may sell, distribute, or transfer to a new owner, or offer for sale, distribution, or transfer to a new owner, any regulated substance used as a refrigerant in stationary refrigerant-containing equipment consisting in whole or in part of recovered regulated substances, unless the recovered regulated substance:

(1) Has been reclaimed by a person who has been certified as a reclaimer under 40 CFR 82.164 and has been reclaimed to the levels as specified in appendix A to 40 CFR part 82, subpart F; or

(2) Is sold, distributed, or transferred to a new owner, or offered for sale, distribution, or transfer to a new owner solely for the purposes of being reclaimed or destroyed.

(b) [Reserved]

§ 84.106 Leak repair.

(a) *Applicability.* This section applies to refrigerant-containing appliances with a full charge of 15 or more pounds of refrigerant where the refrigerant is composed in whole or in part of:

(1) A regulated substance as listed in subsection (c) of the AIM Act or in appendix A to part 84, or

(2) A substitute for a regulated substance that has a global warming potential greater than 53, where the global warming potential is as determined under the following hierarchy:

(i) Where trans-dichloroethylene, also referred to as HCO–1130(E), is used neat or in a blend, the global warming potential shall be five;

(ii) Where cis-1-chloro-2,3,3,3-tetrafluoropropene, also referred to as HCFO–1224yd(Z), is used neat or in a blend, the global warming potential shall be one;

(iii) For each substitute for a regulated substance that is not HCO–1130(E) or is not HCFO–1224yd(Z), but does have a global warming potential listed in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the global warming potential of the substitute for a regulated substance shall be that listed as the 100-year integrated global warming potential and shall be the net global warming potential;

(iv) For each substitute for a regulated substance that is not HCO–1130(E), is not HCFO–1224yd(Z), and is not listed in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the global warming potential of the substitute for a regulated substance shall be that listed as the 100-year integrated global warming potential in the 2022 report by the World Meteorological Organization, titled ''Scientific Assessment of Ozone Depletion: 2022'';

(v) For each substitute for a regulated substance, that is not HCO–1130(E), is not HCFO–1224yd(Z), is not listed in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, and is not listed in the 2022 report by the World Meteorological Organization, the global warming potential of the substitute for a regulated substance shall be that listed in Table A–1 to 40 CFR part 98, as it existed on [DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**], including the use of default global warming potential values for substitutes for regulated substances that are not specifically listed in that table;

(vi) For cases in (iii) through (v) above where a qualifier, including but not limited to approximately, ~, less than, <, much less than, <<, and greater than, >, is provided with a global warming potential value, the value shown shall be the global warming potential of the constituent without consideration of the qualifier;

(vii) For constituents that do not have a global warming potential as provided in paragraphs (a)(2)(i) through (vi) of this section, the global warming potential of the constituent shall be zero.

(3) Notwithstanding the criteria in paragraphs (1) and (2) of this section, the requirements of this section do not apply to:

(i) Appliances (as defined in 40 CFR 82.152) containing solely an ozone-depleting substance as a refrigerant;

(ii) Refrigerant-containing appliances used for the residential and light commercial air conditioning and heat pumps subsector.

(4) Compliance dates. The requirements of this section apply for refrigerant-containing appliances with a full charge of 50 or more pounds as of 60 days after [DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] in the **Federal Register** and for refrigerant-containing appliances with a full charge between 15 and 50 pounds as of 1 year after [DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] in the **Federal Register**.

(b) *Leak rate calculation.* Persons adding or removing refrigerant from a refrigerant-containing appliance must, upon conclusion of that installation, service, repair, or disposal provide the owner or operator with documentation that meets the applicable requirements of paragraph (l)(2) of this section. The owner or operator must calculate the leak rate every time refrigerant is added to an appliance unless the addition is made immediately following a retrofit, installation of a new appliance, or qualifies as a seasonal variance.

(c) *Requirement to address leaks through appliance repair, or retrofitting or retiring an appliance.* (1) Owners or operators must repair refrigerant-containing appliances with a leak rate over the applicable leak rate in this paragraph in accordance with paragraphs (d) through (f) of this section unless the owner or operator elects to retrofit or retire the refrigerant-containing appliance in compliance with paragraphs (h) and (i) of this section. If the owner or operator elects to repair leaks but fails to bring the leak rate below the applicable leak rate, the owner or operator must create and implement a retrofit or retirement plan in accordance with paragraphs (h) and (i) of this section.

(2) Leak rates:

(i) 20 percent leak rate for commercial refrigeration equipment;

(ii) 30 percent leak rate for industrial process refrigeration equipment; and

(iii) 10 percent leak rate for comfort cooling appliances, refrigerated transport appliances, or other refrigerant-containing appliances with a full charge of 15 or more pounds of refrigerant not covered by (c)(2)(i) or (ii) of this section.

(d) *Appliance repair.* Owners or operators must identify and repair leaks in accordance with this paragraph within 30 days (or 120 days if an industrial process shutdown is required) of when refrigerant is added to a refrigerant-containing appliance exceeding the applicable leak rate in paragraph (c) of this section.

(1) A certified technician must conduct a leak inspection, as described in paragraph (g) of this section, to identify the location of leaks.

(2) Leaks must be repaired such that the leak rate is brought below the applicable leak rate. This must be confirmed by the leak rate calculation performed upon the next refrigerant addition. The leaks will be presumed to be repaired if, over the 12-month period after the repair, there is no further refrigerant addition or if the leak inspections required under paragraph (g) of this section and/or automatic leak detection systems required by § 84.108 do not find any leaks in the appliance. Repair of leaks must be documented by both an initial and a follow-up verification test or tests.

(3) The time frames in paragraphs (d) through (f) of this section are temporarily suspended when an appliance is mothballed. The time will resume on the day additional refrigerant is added to the refrigerant-containing appliance (or component of a refrigerant-containing appliance if the leaking component was isolated).

(e) *Verification tests.* The owner or operator must conduct both initial and follow-up verification tests on each leak that was repaired under paragraph (d) of this section.

(1) *Initial verification test.* Unless granted additional time, an initial verification test must be performed within 30 days (or 120 days if an industrial process shutdown is required) of a refrigerant-containing appliance exceeding the applicable leak rate in paragraph (c) of this section. An initial verification test must demonstrate that for leaks where a repair attempt was made, the adjustments or alterations to the refrigerant-containing appliance have held.

(i) For repairs that can be completed without the need to open or evacuate the refrigerant-containing appliance, the test must be performed after the conclusion of the repair work and before any additional refrigerant is added to the refrigerant-containing appliance.

(ii) For repairs that require the evacuation of the refrigerant-containing appliance or portion of the refrigerant-containing appliance, the test must be performed before adding any refrigerant to the refrigerant-containing appliance.

(iii) If the initial verification test indicates that the repairs have not been successful, the owner or operator may conduct as many additional repairs and initial verification tests as needed within the applicable time period.

(2) *Follow-up verification test.* A follow-up verification test must be performed within 10 days of the successful initial verification test or 10 days of the refrigerant-containing appliance reaching normal operating characteristics and conditions (if the refrigerant-containing appliance or isolated component was evacuated for the repair(s)). Where it is unsafe to be present or otherwise impossible to conduct a follow-up verification test when the system is operating at normal operating characteristics and conditions, the verification test must, where practicable, be conducted prior to the system returning to normal operating characteristics and conditions.

(i) A follow-up verification test must demonstrate that leaks where a repair attempt was made are repaired. If the follow-up verification test indicates that the repairs have not been successful, the owner or operator may conduct as many additional repairs and verification tests as needed to bring the refrigerant-containing appliance below the leak rate within the applicable time period and to verify the repairs.

(f) *Extensions to the appliance repair deadlines.* Owners or operators are permitted more than 30 days (or 120 days if an industrial process shutdown is required) to comply with paragraphs (d) and (e) of this section if they meet the requirements of (f)(1) through (4) of this section or the refrigerant-containing appliance is mothballed. The request will be considered approved unless EPA notifies the owners or operators otherwise.

(1) One or more of the following conditions must apply:

(i) The refrigerant-containing appliance is located in an area subject to radiological contamination or shutting down the refrigerant-containing appliance will directly lead to radiological contamination. Additional time is permitted to the extent needed to conduct and finish repairs in a safe working environment.

(ii) Requirements of other applicable Federal, state, local, or Tribal regulations make a repair within 30 days (or 120 days if an industrial process shutdown is required) impossible. Additional time is permitted to the extent needed to comply with the pertinent regulations.

(iii) Components that must be replaced as part of the repair are not available within 30 days (or 120 days if an industrial process shutdown is required). Additional time is permitted up to 30 days after receiving delivery of the necessary components, not to exceed 180 days (or 270 days if an industrial process shutdown is required) from the date the refrigerant-containing appliance exceeded the applicable leak rate.

(2) Repairs to leaks that the technician has identified as significantly contributing to the exceedance of the leak rate and that do not require additional time must be completed and verified within the initial 30 day repair period (or 120 day repair period if an industrial process shutdown is required);

(3) The owner or operator must document all repair efforts and the reason for the inability to make the repair within the initial 30 day repair period (or 120 day repair period if an industrial process shutdown is required); and

(4) The owner or operator must request an extension from EPA electronically, in the manner specified by EPA, within 30 days (or 120 days if an industrial process shutdown is required) of the refrigerant-containing appliance exceeding the applicable leak rate in paragraph (c) of this section. Extension requests must include: Identification and address of the facility; the name of the owner or operator of the refrigerant-containing appliance; the leak rate; the method used to determine the leak rate and full charge; the date the refrigerant-containing appliance exceeded the applicable leak rate; the location of leak(s) to the extent determined to date; any repair work that has been performed thus far, including the date that work was completed; the reasons why more than 30 days (or 120 days if an industrial process shutdown is required) are needed to complete the repair; and an estimate of when the work will be completed. If the estimated completion date is to be extended, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA within 30 days of identifying that the completion date must be extended. The owner or operator must keep a dated copy of this submission.

(g) *Leak inspections.* (1) The owner or operator must conduct a leak inspection in accordance with the following schedule on any refrigerant-containing appliance exceeding the applicable leak rate in paragraph (c)(2) of this section.

(i) For commercial refrigeration and industrial process refrigeration appliances with a full charge of 500 or more pounds, leak inspections must be conducted once every three months until the owner or operator can demonstrate through the leak rate calculations required under paragraph (b) of this section that the appliance has not leaked in excess of the applicable leak rate for four quarters in a row.

(ii) For commercial refrigeration and industrial process refrigeration appliances with a full charge of 50 or more pounds but less than 500 pounds, leak inspections must be conducted once per year until the owner or operator can demonstrate through the leak rate calculations required under paragraph (b) of this section that the appliance has not leaked in excess of the applicable leak rate for one year.

(iii) For comfort cooling appliances and other appliances not covered by paragraphs (g)(1)(i) and (ii) of this section, leak inspections must be conducted once per year until the owner or operator can demonstrate through the leak rate calculations required under paragraph (b) of this section that the appliance has not leaked in excess of the applicable leak rate for one year.

(2) Leak inspections must be conducted by a certified technician using method(s) determined by the technician to be appropriate for that refrigerant-containing appliance.

(3) All visible and accessible components of a refrigerant-containing appliance must be inspected, with the following exceptions:

(i) Where components are insulated, under ice that forms on the outside of equipment, underground, behind walls, or are otherwise inaccessible;

(ii) Where personnel must be elevated more than two meters above a support surface; or

(iii) Where components are unsafe to inspect, as determined by site personnel.

(4) Quarterly or annual leak inspections are not required on refrigerant-containing appliances, or portions of refrigerant-containing appliances, continuously monitored by an automatic leak detection system that is audited or calibrated annually. An automatic leak detection system may directly detect refrigerant in air, monitor its surrounding in a manner other than detecting refrigerant concentrations in air, or monitor conditions of the appliance. An automatic leak detection system being used for this purpose must meet the requirements for automatic leak detection systems per § 84.108(c) through (g) and § 84.108(i).

(i) When an automatic leak detection system is only being used to monitor portions of a refrigerant-containing appliance, the remainder of the refrigerant-containing appliance continues to be subject to any applicable leak inspection requirements.

(ii) [Reserved]

(h) *Retrofit or retirement plans.* (1) The owner or operator must create a retrofit or retirement plan within 30 days of:

(i) A refrigerant-containing appliance leaking above the applicable leak rate in paragraph (c) of this section if the owner or operator intends to retrofit or retire rather than repair the leak;

(ii) A refrigerant-containing appliance leaking above the applicable leak rate in paragraph (c) of this section if the owner or operator fails to take any action to identify or repair the leak; or

(iii) A refrigerant-containing appliance continues to leak above the applicable leak rate after having conducted the required repairs and verification tests under paragraphs (d) and (e) of this section.

(2) A retrofit or retirement plan must, at a minimum, contain the following information:

(i) Identification and location of the refrigerant-containing appliance;

(ii) Type and full charge of the refrigerant used in the refrigerant-containing appliance;

(iii) Type and full charge of the refrigerant to which the refrigerant-containing appliance will be converted, if retrofitted;

(iv) Itemized procedure for converting the refrigerant-containing appliance to a different refrigerant, including changes required for compatibility with the new substitute, if retrofitted;

(v) Plan for the disposition of recovered refrigerant;

(vi) Plan for the disposition of the refrigerant-containing appliance, if retired; and

(vii) A schedule, not to exceed one year, for completion of the appliance retrofit or retirement.

(3) The retrofit or retirement plan must be signed by an authorized company official, dated, accessible at the site of the refrigerant-containing appliance in paper copy or electronic format, and available for EPA inspection upon request.

(4) All identified leaks must be repaired as part of any retrofit under such a plan.

(5) A retrofit or retirement plan must be implemented as follows:

(i) Unless granted additional time, all work performed in accordance with the plan must be finished within one year of the plan's date (not to exceed 12 months from when the plan was finalized as required in paragraph (h)(1) of this section).

(ii) The owner or operator may request that EPA relieve it of the obligation to retrofit or retire a refrigerant-containing appliance if the owner or operator can establish within 180 days of the plan's date that the refrigerant-containing appliance no longer exceeds the applicable leak rate and if the owner or operator agrees in writing to repair all identified leaks within one year of the plan's date consistent with paragraph (h)(4) and (h)(5)(i) of this section. The owner or operator must submit to EPA the retrofit or retirement plan as well as the following information: The date that the requirement to develop a retrofit or retirement plan was triggered; the leak rate; the method used to determine the leak rate and full charge; the location of the leak(s) identified in the leak inspection; a description of repair work that has been completed; a description of repair work that has not been completed; a description of why the repair was not conducted within the time frames required under paragraphs (d) and (f) of this section; and a statement signed by an authorized official that all identified leaks will be repaired and an estimate of when those repairs will be completed (not to exceed one year from date of the plan). The request will be considered approved unless EPA notifies the owners or operators within 60 days of receipt of the request that it is not approved.

(i) *Extensions to the one-year retrofit or retirement schedule.* Owners or operators may request more than one year to comply with paragraph (h) of this section if they meet the requirements of this paragraph. The request will be considered approved unless EPA notifies the owners or operators within 60 days of receipt of the request that it is not approved. The request must be submitted to EPA electronically, in the manner specified by EPA, within seven months of discovering the refrigerant-containing appliance exceeded the applicable leak rate. The request must include the identification of the refrigerant-containing appliance; name of the owner or operator; the leak rate; the method used to determine the leak rate and full charge; the date the refrigerant-containing appliance exceeded the applicable leak rate; the location of leaks(s) to the extent determined to date; any repair work that has been finished thus far, including the date that work was finished; a plan to finish the retrofit or retirement of the refrigerant-containing appliance; the reasons why more than one year is necessary to retrofit or retire the refrigerant-containing appliance; the date of notification to EPA; and an estimate of when retrofit or retirement work will be finished. A dated copy of the request must be available on-site in either electronic or paper copy. If the estimated completion date is to be revised, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA electronically, in the manner specified by EPA, within 30 days. Additionally, the time frames in paragraphs (h) and (i) of this section are temporarily suspended when a refrigerant-containing appliance is mothballed. The time will resume running on the day additional refrigerant is added to the refrigerant-containing appliance (or component of a refrigerant-containing appliance if the leaking component was isolated).

(1) *Extensions available to industrial process refrigeration.* Owners or operators of industrial process refrigeration equipment may request additional time beyond the one-year period in paragraph (h) of this section to finish the retrofit or retirement under the following circumstances.

(i) Requirements of other applicable Federal, state, local, or Tribal regulations make a retrofit or retirement within one year impossible. Additional time is permitted to the extent needed to comply with the pertinent regulations;

(ii) The new or the retrofitted equipment is custom-built as defined in this subpart and the supplier of the appliance or one of its components has quoted a delivery time of more than 30 weeks from when the order is placed. The appliance or appliance components must be installed within 120 days after receiving delivery of the necessary parts;

(iii) The equipment is located in an area subject to radiological contamination and creating a safe working environment will require more than 30 weeks; or

(iv) After receiving an extension under paragraph (i)(1)(ii) of this section, owners or operators may request additional time if necessary to finish the retrofit or retirement of equipment. The request must be submitted to EPA before the end of the ninth month of the initial extension and must include the same information submitted for that extension, with any necessary revisions. A dated copy of the request must be available on-site in either electronic or paper copy. The request will be considered approved unless EPA notifies the owners or operators within 60 days of receipt of the request that it is not approved.

(j) *Chronically leaking appliances.* Owners or operators of refrigerant-containing appliances containing 15 or more pounds of refrigerant that leak 125 percent or more of the full charge in a calendar year must submit a report containing the information required in paragraph (m)(4) of this section to EPA by March 1 of the subsequent year.

(k) *Purged refrigerant.* In calculating annual leak rates, purged refrigerant that is destroyed at a verifiable destruction efficiency of 98 percent or greater will not be counted toward the leak rate.

(l) *Recordkeeping.* All records identified in this paragraph must be kept for at least three years in electronic or paper format, unless otherwise specified.

(1) Upon installation or [DATE 60 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] owners or operators must determine the full charge of all refrigerant-containing appliances with 15 or more pounds of refrigerant

and maintain the following information for each appliance until three years after the appliance is retired:

(i) The identification of the owner or operator of the refrigerant-containing appliance;

(ii) The address where the appliance is located;

(iii) The full charge of the refrigerant-containing appliance and the method for how the full charge was determined;

(iv) If using method 4 (using an established range) for determining full charge, records must include the range for the full charge of the refrigerant-containing appliance, its midpoint, and how the range was determined;

(v) Any revisions of the full charge, how they were determined, and the dates such revisions occurred.

(vi) The date of installation.

(2) Owners or operators must maintain a record including the following information for each time a refrigerant-containing appliance with a full charge of 15 or more pounds is installed, serviced, repaired, or disposed of, when applicable.

(i) The identity and location of the refrigerant-containing appliance;

(ii) The date of the installation, service, repair, or disposal performed;

(iii) The part(s) of the refrigerant-containing appliance being installed, serviced, repaired, or disposed;

(iv) The type of installation, service, repair, or disposal performed for each part;

(v) The name of the person performing the installation, service, repair, or disposal;

(vi) The amount and type of refrigerant added to, or in the case of disposal removed from, the appliance;

(vii) The full charge of the refrigerant-containing appliance; and

(viii) The leak rate and the method used to determine the leak rate (not applicable when disposing of the refrigerant-containing appliance, following a retrofit, installing a new refrigerant-containing appliance, or if the refrigerant addition qualifies as a seasonal variance).

(3) If the installation, service, repair, or disposal is done by someone other than the owner or operator, that person must provide a record containing the information specified in paragraph (l)(2)(i) through (vi) of this section, when applicable, to the owner or operator.

(4) Owners or operators must keep records of leak inspections that include the date of inspection, the method(s) used to conduct the leak inspection, a list of the location of each leak that was identified, and a certification that all visible and accessible parts of the refrigerant-containing appliance were inspected. Technicians conducting leak inspections must, upon conclusion of that service, provide the owner or operator of the refrigerant-containing appliance with documentation that meets these requirements.

(5) If using an automatic leak detection system, the owner or operator must maintain records regarding the installation and the annual audit and calibration of the system, a record of each date the monitoring system identified a leak, and the location of the leak.

(6) Owners or operators must maintain records of the dates and results of all initial and follow-up verification tests. Records must include the location of the refrigerant-containing appliance, the date(s) of the verification tests, the location(s) of all repaired leaks that were tested, the type(s) of verification test(s) used, and the results of those tests. Technicians conducting initial or follow-up verification tests must, upon conclusion of that service, provide the owner or operator of the appliance with documentation that meets these requirements.

(7) Owners or operators must maintain retrofit or retirement plans developed in accordance with paragraph (h) of this section.

(8) Owners or operators must maintain retrofit and/or retirement extension requests submitted to EPA in accordance with paragraph (i) of this section.

(9) Owners or operators that suspend the deadlines in this section by mothballing a refrigerant-containing appliance must keep records documenting when the appliance was mothballed and when additional refrigerant was added to the appliance (or isolated component).

(10) Owners or operators who exclude purged refrigerants that are destroyed from annual leak rate calculations must maintain records to support the amount of refrigerant claimed as sent for destruction. Records must be based on a monitoring strategy that provides reliable data to demonstrate that the amount of refrigerant claimed to have been destroyed is not greater than the amount of refrigerant actually purged and destroyed and that the 98 percent or greater destruction efficiency is met. Records must include flow rate, quantity or concentration of the refrigerant in the vent stream, and periods of purge flow. Records must include:

(i) The identification of the facility and a contact person, including the address and telephone number;

(ii) A description of the refrigerant-containing appliance, focusing on aspects relevant to the purging of refrigerant and subsequent destruction;

(iii) A description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept by the owners or operators where the appliance is located;

(iv) The frequency of monitoring and data-recording; and

(v) A description of the control device, and its destruction efficiency.

(11) Owners or operators that exclude additions of refrigerant due to seasonal variance from their leak rate calculation must maintain records stating that they are using the seasonal variance flexibility and documenting the amount added and removed under paragraph (l)(2) of this section.

(12) Owners or operators that submit reports to EPA in accordance with paragraph (m) of this section must maintain copies of the submitted reports and any responses from EPA.

(m) *Reporting.* All notifications must be submitted electronically in the manner specified by EPA.

(1) Owners or operators must notify EPA electronically, in the manner specified by EPA, in accordance with paragraph (f) of this section when seeking an extension of time to complete repairs.

(2) Owners or operators must notify EPA electronically, in the manner specified by EPA, in accordance with paragraph (h)(5)(ii) of this section when seeking relief from the obligation to retrofit or retire an appliance.

(3) Owners or operators must notify EPA electronically, in the manner specified by EPA, in accordance with paragraph (i) of this section when seeking an extension of time to complete the retrofit or retirement of an appliance.

(4) Owners or operators must report to EPA electronically, in a manner specified by EPA, the following in accordance with paragraph (j) of this section for any refrigerant-containing appliance that leaks 125 percent or more of the full charge in a calendar year.

(i) Basic identification information (*i.e.,* owner name or operator, facility name, facility address where appliance is located, and appliance ID or description);

(ii) Refrigerant-containing appliance type (comfort cooling or other, industrial process refrigeration, or commercial refrigeration);

(iii) Refrigerant type;

(iv) Full charge of appliance (pounds);

(v) Annual percent refrigerant loss;

(vi) Dates of refrigerant addition;

(vii) Amounts of refrigerant added;

(viii) Date of last successful follow-up verification test;

(ix) Explanation of cause refrigerant losses;

(x) Description of repair actions taken; and

(xi) Whether a retrofit or retirement plan been developed for the refrigerant-containing appliance and if so, the anticipated date of retrofit or retirement.

(5) When excluding purged refrigerants that are destroyed from annual leak rate calculations, owners or operators must notify EPA electronically, in the manner specified by EPA, within 60 days after the first time the exclusion is used by the facility where the appliance is located. The report must include the information included in paragraph (l)(10) of this section.

§ 84.108 Automatic leak detection systems.

(a) Owners or operators of refrigerant-containing appliances used for industrial process refrigeration or commercial refrigeration with a full charge of 1,500 pounds or greater of a refrigerant containing a regulated substance or a substitute for a regulated substance with a GWP greater than 53 must install and use an automatic leak detection system in accordance with this section.

(b) (1) Owners and operators of refrigerant-containing appliances subject to paragraph (a) of this section installed on or after [DATE 60 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] must install and use automatic leak detection systems within 30 days of the appliance installation.

(2) Owners and operators of refrigerant-containing appliances subject to paragraph (a) of this section installed before [DATE 60 DAYS AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**] must install and use automatic leak detection systems by [DATE 1 YEAR AFTER DATE OF PUBLICATION OF THE FINAL RULE IN THE **FEDERAL REGISTER**].

(c) Automatic leak detection systems must be installed in accordance with manufacturer instructions.

(d) Automatic leak detection systems must be audited and calibrated annually.

(e) Automatic leak detection systems are required to monitor components located inside an enclosed building or structure.

(f) For automatic leak detection systems that directly detect the presence of a refrigerant in air, the system must:

(1) Have sensors or intakes placed so that they will continuously monitor the refrigerant concentrations in air in proximity to the compressor, evaporator, condenser, and other areas with a high potential for a refrigerant leak;

(2) Accurately detect a concentration level of 10 parts per million of vapor of the specific refrigerant or refrigerants used in the refrigerant-containing appliance(s); and

(3) Alert the owner or operator when a refrigerant concentration of 100 parts per million of vapor of the specific refrigerant or refrigerants used in the appliance(s) is reached.

(g) For automatic leak detection systems that monitor conditions of the refrigerant-containing appliance, the system must automatically alert the owner or operator when measurements indicate a loss of 50 pounds of refrigerant or 10 percent of the full charge, whichever is less.

(h) When an automatic leak detection system alerts an owner or operator of a leak as described in this paragraph owners and operators of refrigerant-containing appliances using automatic leak detection systems must:

(1) Calculate the leak rate within 30 days (or 120 days where an industrial process shutdown would be necessary) of an alert and, if the leak rate is above the applicable leak rate as described in § 84.106(c)(2), comply with the full suite of leak repair provisions in § 84.106; or

(2) Preemptively repair the identified leak before adding refrigerant to the appliance and then calculate the leak rate within 30 days (or 120 days where an industrial process shutdown would be necessary) of an alert. If the leak rate is above the applicable leak rate as described in § 84.106(c)(2), the owner or operator must comply with the full suite of leak repair provisions in § 84.106.

(3) Where a refrigerant-containing appliance using an automatic leak detection system is found to be leaking above the applicable leak rate as described in § 84.106(c)(2), and the automatic leak system is only being used to monitor portions of an appliance, the remainder of the appliance continues to be subject to any applicable leak inspection requirements, as described in § 84.106(g).

(i) *Recordkeeping.* The owner or operator must maintain records for at least three years in electronic or paper format, unless otherwise specified, regarding:

(1) The installation of the automatic leak detection system;

(2) The annual audit and calibration of the system;

(3) A record of each date the automatic leak detection system triggers an alert; and

(4) The location of the leak.

§ 84.110 Emissions from fire suppression equipment.

(a) As of January 1, 2025, no person installing, servicing, repairing, or disposing of fire suppression equipment containing a regulated substance may knowingly vent or otherwise release into the environment any regulated substances used in such equipment.

(1) Release of regulated substances during testing of fire suppression equipment is not subject to this prohibition under paragraph (a) of this section if the following four conditions are met:

(i) Equipment employing suitable alternative fire suppression agents are not available;

(ii) Release of fire suppression agent is essential to demonstrate equipment functionality;

(iii) Failure of the system or equipment would pose great risk to human safety or the environment; and

(iv) A simulant agent cannot be used in place of the regulated substance for testing purposes.

(2) This prohibition under paragraph (a) of this section does not apply to qualification and development testing during the design and development process of fire suppression equipment containing regulated substances when such tests are essential to demonstrate equipment functionality and when a suitable simulant agent cannot be used in place of the regulated substance for testing purposes.

(3) This prohibition does not apply to the emergency release of regulated substances for the legitimate purpose of fire extinguishing, explosion inertion, or other emergency applications for which the equipment were designed.

(b) As of January 1, 2025, no owner or operator of fire suppression equipment containing regulated substances shall allow the release of regulated substances to occur as a result of failure to maintain such equipment.

(c) As of January 1, 2025, recycled regulated substances must be used for the initial installation of new fire suppression equipment, including both total flooding systems and streaming applications, that is installed in the United States, and for the servicing and/or repair of existing fire suppression equipment in the United States, including both total flooding systems and streaming applications. This requirement does not apply to onboard aerospace fire suppression applications

that qualify for application-specific allowances under regulations at § 84.13.

(1) Any person using equipment to recover, store, and transfer regulated substances used in fire suppression equipment must evacuate equipment used to recover, store, and transfer regulated substances prior to each use to prevent contamination, arrange for destruction of the recovered regulated substances as necessary, and collect and dispose of wastes from recycling process.

(2) Any person using recovery and recycling equipment to recover regulated substances from fire suppression equipment must (1) operate and maintain recovery and recycling equipment in accordance with manufacturer specifications to ensure that the equipment performs as specified; (2) repair leaks in storage, recovery, recycling, or charging equipment used with regulated substances before use; and (3) ensure that cross-contamination does not occur through the mixing of regulated substances that may be contained in similar cylinders.

(d) Any person who employs fire suppression technicians who install, service, repair, or dispose of fire suppression equipment containing regulated substances shall train technicians hired on or before January 1, 2025, on emissions reduction of regulated substances by June 1, 2025. Fire suppression technicians hired after January 1, 2025, shall be trained regarding emissions reduction of regulated substances within 30 days of hiring, or by June 1, 2025, whichever is later.

(1) The fire suppression technician training shall cover an explanation of the purpose of the training requirement, including the significance of minimizing releases of HFCs and ensuring technician safety, (b) an overview of regulated substances and environmental concerns with regulated substances, including other federal, state, local, or Tribal fire, building, safety, and environmental codes and standards, (c) a review of relevant regulations concerning regulated substances, including the requirements of the regulated substances emissions reduction program for fire suppression equipment, and (d) specific technical instruction relevant to avoiding unnecessary emissions of regulated substances during the servicing, repair, disposal, or installation of fire suppression equipment at each individual facility.

(2) [Reserved]

(e) As of January 1, 2025, no person shall dispose of fire suppression equipment containing regulated substances except by recovering the regulated substances themselves or by arranging for the recovery of the regulated substances by a fire suppression equipment manufacturer, a distributor, or a fire suppressant recycler.

(f) As of January 1, 2025, no person shall dispose of regulated substances used as a fire suppression agent except by sending it for recycling to a fire suppressant recycler or a reclaimer certified under 40 CFR 82.164, or by arranging for its destruction using one of the controlled processes listed in § 84.29.

(g) Recordkeeping and reporting. (1) As of January 1, 2025, any person who performs first fill of fire suppression equipment, service (*e.g.,* recharge) of fire suppression equipment and/or recycles regulated substances recovered from fire suppression equipment, such as equipment manufacturers, distributors, agent suppliers or installers that recycle regulated substances must submit a report to EPA annually by February 14th of each year (covering prior year's activity from January 1 through December 31): the quantity of material (the combined mass of regulated substance and contaminants) by regulated substance broken out by sold, recovered, recycled, and virgin for the purpose of installation of new equipment and servicing and/or repair of existing fire suppression equipment; the total mass of each regulated substance broken out by sold, recovered, recycled, and virgin; and the total mass of waste products sent for disposal, along with information about the disposal facility if waste is not processed by the reporting entity. Such records must be maintained for three years in either electronic or paper format.

(2) As of January 1, 2025, any person who employs fire suppression technicians who service, repair, install, or dispose of fire suppression equipment containing regulated substances must maintain an electronic or paper copy of the fire suppression technician training used, and make available to EPA upon request a copy of the training. These entities must document that they have provided training to personnel and must maintain these records for three years in either electronic or paper format.

(3) As of January 1, 2025, owners and operators of fire suppression equipment containing regulated substances must maintain records documenting that regulated substances are recovered from the fire suppression equipment before it is sent for disposal, either by recovering the regulated substances themselves before sending the equipment for disposal or by leaving the regulated substances in the equipment and sending it for disposal to a facility, such as a fire suppression equipment manufacturer, distributor, or a fire suppressant recycler. Such records must be maintained for three years in either electronic or paper format.

§ 84.112 Reclamation.

(a) No person may sell, identify, or report refrigerant as being reclaimed for use in the installation, servicing, or repair of refrigerant-containing equipment if the regulated substance component of the resulting refrigerant contains more than 15 percent, by weight, of virgin regulated substance.

(b) No person may sell, identify, or report refrigerant as being reclaimed if it contains any recovered regulated substance that has not had bona fide use in equipment, unless that refrigerant was removed from the heel or residue of a container that had a bona fide use in the servicing, repair, or installation of refrigerant-containing equipment.

(c) Labeling. As of January 1, 2026, reclaimers certified under 40 CFR 82.164 must affix a label to any container being sold or distributed or offered for sale or distribution that contain reclaimed regulated substances to certify that the contents do not exceed 15 percent, by weight, of virgin regulated substances.

(1) The label must read: ''The contents of this container do exceed the limit on virgin regulated substance per *40 CFR 84.112(a).*''

(2) The label must be:

(i) In English;

(ii) Durable and printed or otherwise labeled on, or affixed to, an external surface of the container;

(iii) Readily visible and legible;

(iv) Able to withstand open weather exposure without a substantial reduction in visibility or legibility; and

(v) Displayed on a background of contrasting color.

(d) Recordkeeping. As of January 1, 2026, reclaimers certified under 40 CFR 82.164 must generate a record to certify that the reclaimed regulated substances being used to fill a container that will be sold or distributed or offered for sale or distribution do not exceed 15 percent, by weight, of virgin regulated substances.

(1) The record must be generated electronically, in a format specified by EPA.

(2) The record must contain the following information:

(i) the name, address, contact person, email address, and phone number of the reclaimer certified under 40 CFR 82.164;

(ii) the date the container was filled with reclaimed regulated substance(s);

(iii) the amount and name of the regulated substance(s) in the container(s);

(iv) certification that the contents of the container are from a batch where the amount of virgin regulated substances does not exceed 15 percent, by weight, of the total regulated substances;

(v) the unique serial number associated with the container(s) filled from the batch;

(vi) identification of the batch of reclaimed regulated substances used to fill the container(s); and

(vii) the percent, by weight, of virgin regulated substance(s) in the batch used to fill the container(s).

(3) The record must be maintained by the reclaimer certified under 40 CFR 82.164 for three years.

(e) As of January 1, 2028, reclaimed refrigerant must be used for the initial charge, whether charged in a factory or in the field, for new refrigerant-containing equipment that is installed in the United States in the following subsectors, if the refrigerant-containing equipment being charged uses a refrigerant that contains a regulated substance:

(1) Residential and light commercial air conditioning and heat pumps;

(2) Cold storage warehouses;

(3) Industrial process refrigeration;

(4) Stand-alone retail food refrigeration;

(5) Supermarkets;

(6) Refrigerated transport; and

(7) Automatic commercial ice makers.

(f) As of January 1, 2028, reclaimed refrigerant must be used when servicing and/or repairing refrigerant-containing equipment in the following subsectors, if the refrigerant-containing equipment serviced and/or repaired uses a refrigerant that contains a regulated substance:

(1) Stand-alone retail food refrigeration;

(2) Supermarket systems;

(3) Refrigerated transport; and

(4) Automatic commercial ice makers.

§ 84.114 Exemptions.

(a) The regulations under this subpart do not apply to a regulated substance or a substitute for a regulated substance that is contained in a foam.

(b) [Reserved]

§ 84.116 Requirements for disposable cylinders.

(a) As of January 1, 2025, any person who uses a disposable cylinder must send such disposable cylinder to either a reclaimer certified under 40 CFR 82.164 or fire suppressant recycler, consistent with the requirements in paragraph (b) of this section, for its remaining contents to be removed, when:

(1) The disposable cylinder contains a regulated substance;

(2) The disposable cylinder was used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment; and

(3) The person does not intend to use the disposable cylinder in future servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment.

(b) Disposable cylinders that meet the criteria in paragraphs (a)(1), (2), and (3) of this section must be sent to:

(1) A reclaimer certified under 40 CFR 82.164, if the disposable cylinder was used in the servicing, repair, or installation of refrigerant-containing equipment, or

(2) A fire suppressant recycler, if the disposable cylinder was used in the servicing, repair, or installation of fire suppression equipment.

(c) As of January 1, 2025, a reclaimer certified under 40 CFR 82.164 or a fire suppressant recycler who receives a disposable cylinder meeting the criteria in paragraphs (a)(1), (2), and (3) of this section must remove all remaining contents from the disposable cylinder prior to disposal.

(d) Small cans of refrigerant that contain no more than two pounds of refrigerant and that qualify for the exemption described in 40 CFR 82.154(c)(1)(ix) are not required to be sent to a reclaimer certified under 40 CFR 82.164 and such small cans are not required to have remaining regulated substance removed from them prior to disposal.

§ 84.118 Container tracking system.

(a) *Scope and applicability.* Machine-readable tracking identifiers may only be generated by a person that produces, imports, reclaims, recycles for fire suppression use, repackages, or fills into a container regulated substances for distribution or sale in U.S. commerce that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment and that reports to EPA consistent with paragraph (d) of this section. All containers of regulated substances that enter U.S. commerce and that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment, with the limited exceptions described in paragraph (b)(4) of this section, must have a machine-readable tracking identifier affixed to them on the following schedule:

(1) As of January 1, 2025, all containers of regulated substances imported and all containers sold or distributed or offered for sale or distribution by producers and importers that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must have a machine-readable tracking identifier affixed on them.

(2) As of January 1, 2026, all containers of regulated substances filled and all containers sold or distributed or offered for sale or distribution that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment by all other repackagers and cylinder fillers in the United States not included in paragraph (a)(1) of this section, including reclaimers and fire suppressant recyclers, must have a machine-readable tracking identifier affixed on them.

(3) As of January 1, 2027, every container of regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment sold or distributed, offered for sale or distribution, purchased or received, or attempted to be purchased or received must have a machine-readable tracking identifier affixed on them.

(b) *Prohibitions.* Every kilogram of regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment that is sold or distributed, offered for sale or distribution, purchased or received, or attempted to be purchased or received in violation of this section is a separate violation of this subpart. Sale or distribution, offer for sale or distribution, purchase or receipt, or attempt to purchase or receive less than one kilogram of regulated substances in violation of this section is a separate violation of this subpart.

(1) No person may sell or distribute, or offer for sale or distribution, and no person may purchase or receive, or attempt to purchase or receive, a container of regulated substance(s) that could be used in servicing, repair, or refrigerant-containing equipment or fire suppression installation of equipment unless the container has a valid machine-readable tracking identifier affixed on it.

(2) No person may sell or distribute, or offer for sale or distribution, regulated substances that could be used in servicing, repair, or installation of

refrigerant-containing equipment or fire suppression equipment unless that person is registered with EPA consistent with paragraph (d) of this section.

(3) No person may purchase or receive, or attempt to purchase or receive, regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment from a person that is not registered with EPA consistent with paragraph (d) of this section;

(4) The following situations are exempt from the prohibitions in paragraphs (b)(1) through (3) of this section:

(i) The regulated substances were recovered from a motor vehicle air conditioner (MVAC) or MVAC-like appliance in accordance with 40 CFR part 82, subpart B and are sold or distributed or offered for sale or distribution by the same person who recovered the regulated substances for use only in MVAC equipment or MVAC-like appliances.

(ii) The regulated substances were previously used, have been recovered from refrigerant-containing equipment or fire suppression equipment, and are intended for reclamation or fire suppressant recycling; and

(A) The person selling or distributing the regulated substances certifies in writing to the person purchasing or receiving the regulated substances that they were recovered from refrigerant-containing equipment or fire suppression equipment and provides the date of recovery; and

(B) The person purchasing or receiving the regulated substances is an EPA-certified reclaimer, a registered fire suppressant recycler consistent with paragraph (d) of this section, or a registered supplier of regulated substances consistent with paragraph (d) of this section.

(iii) The regulated substances are contained in small cans of refrigerant that contain no more than two pounds of refrigerant and that qualify for the exemption described in 40 CFR 82.154(c)(1)(ix).

(iv) The regulated substances are intended solely for uses other than in refrigerant-containing equipment or fire suppression equipment.

(c) *Required practices.* The following practices are required, unless listed in paragraph (b)(4) of this section:

(1) Any person producing, importing, reclaiming, recycling for fire suppression uses, repackaging, selling or distributing, or offering to sell or distribute regulated substances that could be used in servicing, repair, or installation of refrigerant-containing or fire suppression equipment must register with EPA consistent with paragraph (d) of this section.

(2) Any person who imports, sells, or distributes, or offers for sale or distribution a container of regulated substance or reclaimed regulated substance that could be used in servicing, repair, or installation of any refrigerant-containing or fire suppression equipment, or recycled regulated substances that could be used in servicing, repair, or installation of fire suppression equipment, must permanently affix a machine-readable tracking identifier to the container using the standards defined by EPA prior to the import, sale or distribution, or offer for sale or distribution of the container. For the purposes of this section, examples of when a container of regulated substances, reclaimed regulated substances, or recycled regulated substances is imported, sold or distributed, or offered for sale or distribution include the date of importation (consistent with 19 CFR 101.1) and departure from a production, reclamation, fire suppressant recycling, repackaging or filling facility.

(3) At the time of sale or distribution or offer for sale or distribution, a person selling or distributing or offering for sale or distribution a container of regulated substance that could be used in servicing, repair, or installation of refrigerant-containing or fire suppression equipment must ensure there is a valid and legible machine-readable tracking identifier on each container of regulated substance, scan the machine-readable tracking identifier to identify a transaction, identify the person receiving the regulated substance, and indicate whether the person receiving the regulated substance is a supplier or final customer.

(4) At the time of sale or distribution, a person taking ownership of a container of regulated substance that is a registered supplier must ensure there is a valid and legible machine-readable tracking identifier on each container of regulated substance and scan the machine-readable tracking identifier in the tracking system to identify a transaction.

(d) *Recordkeeping and reporting.*

(1) *Importers.* Any person importing a container of regulated substance that could be used in servicing, repair, or installation of refrigerant-containing or fire suppression equipment must enter the following information in the tracking system to generate a machine-readable tracking identifier for each container of regulated substance imported: the name or brand the regulated substance is being sold and/or marketed under, the date it was imported, the unique serial number associated with the container, the size of the container, the amount and name of the regulated substance(s) in the container, the name, address, contact person, email address, and phone number of the responsible party at the facility where the container of regulated substance(s) was filled, the entry number and entry line number associated with the import, and certification that the contents of the container match the substance(s) identified on the label.

(2) *Reclaimers.* Any person filling a container with a reclaimed regulated substance that could be used in servicing, repair, or installation of refrigerant-containing equipment must enter the following information in the tracking system to generate a machine readable-tracking identifier for each container of regulated substance sold or distributed or offered for sale or distribution: the name or brand the regulated substance is being sold and/or marketed under, when the regulated substance was reclaimed and by whom, the date the reclaimed regulated substance was put into a container, the unique serial number associated with the container, the size of the container, the amount and name of the regulated substance(s) in the container, certification that the contents of the container match the substance(s) identified on the label, and certification that the purity of the batch was confirmed to meet the specifications in appendix A to 40 CFR part 82, subpart F. If a container is filled with reclaimed and virgin regulated substance(s), the reclaimer must provide the amount of virgin regulated substance included in the container and that the contents of the container are certified per § 84.112(d).

(3) *Fire suppressant recyclers.* Any person filling a container with a recycled regulated substance that could be used in servicing, repair, or installation of fire suppression equipment must enter the following information in the tracking system to generate a machine-readable tracking identifier for each container of regulated substance sold or distributed or offered for sale or distribution: the name or brand the regulated substance is being sold and/or marketed under, the date the container was filled and by whom, the unique serial number associated with the container, the size of the container, certification that the contents of the container match the substance(s) identified on the label, and the amount and name of the regulated substance(s) in the container. If a container is filled

with recycled and virgin regulated substance(s), the recycler must provide the amount of virgin regulated substance included in the container.

(4) *Producers and repackagers.* Anyone who is filling a container, whether for the first time after production or when transferring regulated substances from one container to one or more smaller or larger containers, must enter information in the tracking system and generate a machine-readable tracking identifier for the container(s) of packaged regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment that are sold or distributed or offered for sale or distribution: the name or brand the regulated substance is being sold and/or marketed under, the date the container was filled and by whom, the unique serial number associated with the container, the amount and name of the regulated substance(s) in the container, the quantity of containers it was packaged in, the size of the containers, certification that the contents of the container match the substance(s) identified on the label, and the name, address, contact person, email address, and phone number of the responsible party at the facility where the container(s) were filled.

(5) *Machine-readable tracking identifier generators registration.* Any person who produces, imports, reclaims, recycles for fire suppression uses, repackages or fills a container of regulated substances or reclaimed regulated substances that could be used in servicing, repair, or installation of refrigerant-containing equipment or recycled regulated substances that could be used in the servicing, repair, or installation of fire suppression equipment must register with EPA in the tracking system no later than the first time they would be required to generate a machine-readable tracking identifier. The registration information provided must contain the name and address of the company, contact information for the owner of the company, the date(s) of and State(s) in which the company is incorporated and State license identifier(s), the address of each facility that sells or distributes or offers for sale or distribution regulated substances, and how the company introduces regulated substances into U.S. commerce. If any of the registration information changes, these reports must be updated and resubmitted within 60 days of the change.

(6) *Supplier registration.* Any person who sells, distributes, or offers for sale or distribution, regulated substances that could be used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment must register with EPA in the tracking system no later than first time the person would be required to update tracking information in the system. The registration information provided must contain the name and address of the company, contact information for the owner of the company, the date(s) of and State(s) in which the company is incorporated and State license identifier(s), and the address of each facility that sells or distributes regulated substances. If any of the registration information changes, these reports must be updated and resubmitted within 60 days of the change.

§ 84.120 Container tracking of used cylinders.

(a) Scope and applicability. Cylinders that contain regulated substances and that have been used in the servicing, repair, or installation of refrigerant-containing equipment or fire suppression equipment and that have a machine-readable tracking identifier affixed on them are subject to the following tracking requirements, as applicable, as of January 1, 2026:

(1) Any person receiving a cylinder subject to requirements under paragraph (a) of this section must be registered in the tracking system no later than the first time they would be required to update information in the tracking system.

(2) [Reserved]

(b) Disposable cylinders. (1) *Reclaimers and fire suppressant recyclers.*

(i) Upon receipt of a disposable cylinder meeting the applicability criteria in paragraph (a) of this section, reclaimers certified under 40 CFR 82.164 and fire suppressant recyclers must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the disposable cylinder was received and the name, address, contact person, email address, and phone number of the person who sent the disposable cylinder.

(ii) Upon removal of any remaining regulated substance from the disposable cylinder meeting the applicability criteria in paragraph (a) of this section, reclaimers certified under 40 CFR 82.164 and fire suppressant recyclers must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date that the regulated substances were removed from the disposable cylinder; certification that all regulated substances were removed; and the amount and name of the removed regulated substance(s).

(2) *Suppliers.* (i) Upon receipt of a disposable cylinder meeting the applicability criteria in paragraph (a) of this section, distributors and wholesalers must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the disposable cylinder was received and the name, address, contact person, email address, and phone number of the person who sent the disposable cylinder.

(ii) [Reserved]

(c) Refillable cylinders. (1) *Exemptions.*

(i) Refillable cylinders that contain only regulated substances that were previously used and have been recovered refrigerant-containing equipment or fire suppression equipment and are intended for reclamation or fire suppressant recycling are exempt from the requirements under this section.

(ii) [Reserved]

(2) *Reclaimers and fire suppressant recyclers.*

(i) Upon receipt of a refillable cylinder meeting the applicability criteria in paragraph (a) of this section, reclaimers certified under 40 CFR 82.164 and fire suppressant recyclers must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the refillable cylinder was received and the name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

(ii) Upon removal of any remaining regulated substance from the refillable cylinder meeting the applicability criteria in paragraph (a) of this section, reclaimers certified under 40 CFR 82.164 and fire suppressant recyclers must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the remaining regulated substance was removed from the refillable cylinder, certification that all remaining regulated substances were removed, and the amount and name of the removed regulated substance.

(3) *Suppliers.* (i) Upon receipt of a refillable cylinder meeting the applicability criteria in paragraph (a) of this section, distributors and wholesalers must scan the machine-readable tracking identifier affixed to the cylinder and update the following

information in the tracking system: the date the refillable cylinder was received and the name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

(ii) [Reserved]

(4) Any person, other than those meeting the requirements per paragraphs (c)(2)(i) and (ii) of this section, who refills a refillable cylinder with regulated substances or a blend containing regulated substances, is subject to the following requirements:

(i) Upon receipt of a refillable cylinder meeting the applicability criteria in paragraph (a) of this section, any person as described per paragraph (c)(4) of this section must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the refillable cylinder was received and the name, address, contact person, email address, and phone number of the person who sent the refillable cylinder.

(ii) Upon removal of any remaining regulated substance from the refillable cylinder meeting the applicability criteria in paragraph (a) of this section, any person as described per paragraph (c)(4) of this section must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the remaining regulated substances were removed from the refillable cylinder; and the amount and name of the removed regulated substance(s).

(iii) Upon refilling a refillable cylinder, without removing the remaining amount of regulated substances, meeting the applicability criteria in paragraph (a) of this section with additional regulated substance or a blend containing a regulated substance, any person as described per paragraph (c)(4) of this section must scan the machine-readable tracking identifier affixed to the cylinder and update the following information in the tracking system: the date the refillable cylinder is refilled; and the amount and the name of the regulated substance(s) that remained in the refillable cylinder before it was refilled.

(d) Small cans of refrigerant that contain no more than two pounds of regulated substances and that qualify for the exemption at 40 CFR 82.154(c)(1)(ix) are exempt from the tracking requirements under this section.

§ 84.122 Treatment of data submitted under 40 CFR part 84, subpart C.

(a) Except as otherwise provided in this section, 40 CFR 2.201 through 2.215 and 2.301 do not apply to data submitted under this subpart that EPA has determined through rulemaking to be either of the following:

(1) Emission data, as defined in 40 CFR 2.301(a)(2), determined in accordance with section 114(c) and 307(d) of the Clean Air Act; or

(2) Data not otherwise entitled to confidential treatment.

(b) Except as otherwise provided in paragraph (d) of this section, 40 CFR 2.201 through 2.208 and 2.301(c) and (d) do not apply to data submitted under this subpart that EPA has determined through rulemaking to be entitled to confidential treatment. EPA shall treat that information as confidential in accordance with the provisions of 40 CFR 2.211, subject to paragraph (d) of this section and 40 CFR 2.209.

(c) Upon receiving a request under 5 U.S.C. 552 for data submitted under this subpart that EPA has determined through rulemaking to be entitled to confidential treatment, the relevant Agency official shall furnish the requestor a notice that the information has been determined to be entitled to confidential treatment and that the request is therefore denied. The notice shall include or cite to the appropriate EPA determination.

(d) A determination made through rulemaking that information submitted under this subpart is entitled to confidential treatment shall continue in effect unless, subsequent to the confidentiality determination through rulemaking, EPA takes one of the following actions:

(1) EPA determines through a subsequent rulemaking that the information is emission data or data not otherwise entitled to confidential treatment; or

(2) The Office of General Counsel issues a final determination, based on the requirements of 5 U.S.C. 552(b)(4), stating that the information is no longer entitled to confidential treatment because of change in the applicable law or newly discovered or changed facts. Prior to making such final determination, EPA shall afford the business an opportunity to submit comments on pertinent issues in the manner described by 40 CFR 2.204(e) and 2.205(b). If, after consideration of any timely comments submitted by the business, the Office of General Counsel makes a revised final determination that the information is not entitled to confidential treatment, the relevant agency official will notify the business in accordance with the procedures described in 40 CFR 2.205(f)(2).

§ 84.124 Relationship to other laws.

Section (k) of the AIM Act states that sections 113, 114, 304, and 307 of the Clean Air Act (42 U.S.C. 7413, 7414, 7604, 7607) shall apply to this section and any rule, rulemaking, or regulation promulgated by the Administrator pursuant to this section as though this section were expressly included in title VI of that Act (42 U.S.C. 7671 *et seq.*). Violation of this part is subject to Federal enforcement and the penalties laid out in section 113 of the Clean Air Act.

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

■ 3. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924(y) and 6938.

Subpart A—General

■ 4. In § 261.6, revise paragraph (a)(2) and add paragraph (a)(2)(v) to read as follows:

§ 261.6 Requirements for recyclable materials.

(a) * * *

(2) The following recyclable materials are not subject to the requirements of this section but are regulated under subparts C through Q of part 266 of this chapter and all applicable provisions in parts 268, 270, and 124 of this chapter.

* * * * *

(v) Ignitable spent refrigerants recycled for reuse (40 CFR part 266, subpart Q).

* * * * *

Subpart M—Emergency Preparedness and Response for Management of Excluded Hazardous Secondary Materials

■ 5. In § 261.400, revise the introductory text and add paragraph (c) to read as follows:

§ 261.400 Applicability.

The requirements of this subpart apply to those areas of an entity managing hazardous secondary materials excluded under § 261.4(a)(23), (a)(24), and/or, for ignitable spent refrigerants, regulated under the alternative standards at § 266 subpart Q, where hazardous secondary materials are generated or accumulated on site.

* * * * *

(c) Reclamation facilities receiving refrigerant from off-site to be recycled for reuse under § 266 subpart Q must comply with §§ 261.410 and 261.420.

PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

■ 6. The authority citation for part 262 continues to read as follows:

Authority: 42 U.S.C. 6906, 6912, 6922–6925, 6937, 6938 and 6939g.

Subpart A—General

■ 7. In § 262.14, revise paragraph (a)(5)(vi) to read as follows:

§ 262.14 Conditions for exemption for a very small quantity generator.

(a) * * *

(5) * * *

(vi) A facility which:

(A) Beneficially uses or reuses, or legitimately recycles or reclaims its waste; or

(B) Treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation; and

(C) For ignitable spent refrigerants regulated under part 266 subpart Q, meets the requirements of that subpart; or

* * * * *

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

■ 8. The authority citation for part 266 continues to read as follows:

Authority: 42 U.S.C. 1006, 2002(a), 3001–3009, 3014, 3017, 6905, 6906, 6912, 6921, 6922, 6924–6927, 6934, and 6937.

■ 9. Add to part 266, subpart Q consisting of §§ 266.600 through 266.602 to read as follows:

Subpart Q—Ignitable Spent Refrigerants Recycled for Reuse

Sec.

§ 266.600 Purpose and applicability.

(a) The purpose of this subpart is to reduce emissions of ignitable spent refrigerants to the lowest achievable level by maximizing the recovery and safe recycling for reuse of such refrigerants during the maintenance, service, repair, and disposal of appliances.

(b) The requirements of this subpart operate in lieu of parts 262 through 270 and apply to lower flammability spent refrigerants, as defined in § 266.601, where the refrigerant exhibits the hazardous waste characteristic of ignitability per § 261.21 and is being recycled for reuse in the U.S.

(c) These requirements do not apply to other ignitable spent refrigerants. Ignitable spent refrigerants not subject to this subpart are subject to all applicable requirements of parts 262 through 270 when recovered (*i.e.,* removed from an appliance and stored in an external container) and/or disposed of.

§ 266.601 Definitions for this subpart.

For the purposes of this subpart, the following terms have the meanings given below:

(a) *Refrigerant* has the same meaning as defined in 40 CFR 82.152.

(b) *Recycle for reuse,* when referring to an ignitable spent refrigerant, means to process the refrigerant to remove contamination and prepare it to be used again. ''Recycle for reuse'' does not include recycling that involves burning for energy recovery or use in a manner constituting disposal as defined in § 261.2(c), or sham recycling as defined in § 261.2(g).

(c) *Lower flammability spent refrigerant* means a spent refrigerant that does not have a flammability classification of 3 (highly flammable) under the most recent edition of ANSI/ASHRAE Standard 34 *Designation and Safety Classification of Refrigerants.*

§ 266.602 Standards for facilities that recycle ignitable spent refrigerant for reuse under this subpart.

(a) Persons who recycle ignitable spent refrigerants for reuse either on-site for further use in equipment of the same owner, or in compliance with motor vehicle air conditioner (MVAC) standards in 40 CFR part 82, subpart B must:

(1) Recover (*i.e.,* remove from an appliance and store in an external container) and/or recycle for reuse the ignitable spent refrigerant using equipment that is certified for that type of refrigerant and appliance under § 82.36 and 82.158; and

(2) Not speculatively accumulate the ignitable spent refrigerant per § 261.1(c).

(b) Persons receiving refrigerant from off-site to be recycled for reuse under this subpart must:

(1) Maintain certification by EPA under § 82.164,

(2) Meet the emergency preparedness and response requirements of 40 CFR part 261, subpart M; and

(3) Not speculatively accumulate the ignitable spent refrigerant per § 261.1(c).

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

■ 10. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

Subpart A—General Information

■ 11. In § 270.1, add paragraph (c)(2)(xi) to read as follows:

§ 270.1 Purpose and scope of the regulations in this part.

* * * * *

(c) * * *

(2) * * *

(xi) Recyclers of ignitable spent refrigerants subject to regulation under 40 CFR part 266, subpart Q.

* * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

■ 12. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6926, and 6939g.

Subpart A—Requirements for Final Authorization

■ 13. Amend § 271.1 by:

■ a. In table 1 in paragraph (j)(2) adding the entry ''[Date of publication of the final rule in the **Federal Register**]'' in chronological order.

■ b. In table 2 in paragraph (j)(2) adding the entry ''[Date of publication of the final rule in the **Federal Register**]'' in chronological order.

The additions read as follows:

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

(2) * * *

TABLE 1—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	**Federal Register** reference	Effective date
* *	* *	* *	* *
[Date of publication of the final rule in the **Federal Register**].	Standards for the Management of Ignitable Spent Refrigerants Recycled for Reuse.	[**Federal Register** citation of the final rule].	[Date of publication of the final rule in the **Federal Register**].

[1] These regulations implement HSWA only to the extent that they apply to tank systems owned or operated by small quantity generators, establish leak detection requirements for all new underground tank systems, and establish permitting standards for underground tank systems that cannot be entered for inspection.
[2] These regulations, including test methods for benzo(k)fluoranthene and technical standards for drip pads, implement HSWA only to the extent that they apply to the listing of Hazardous Waste No. F032, and wastes that are hazardous because they exhibit the Toxicity Characteristic. These regulations, including test methods for benzo(k)fluoranthene and technical standards for drip pads, do not implement HSWA to the extent that they apply to the listings of Hazardous Waste Nos. F034 and F035.
[3] The following portions of this rule are not HSWA regulations: §§ 264.19 and 265.19 for final covers.
[4] The following portions of this rule are not HSWA regulations: §§ 260.30, 260.31, 261.2.
[5] These regulations implement HSWA only to the extent that they apply to the standards for staging piles and to §§ 264.1(j) and 264.101(d) of this chapter.

TABLE 2—SELF-IMPLEMENTING PROVISIONS OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Effective date	Self-implementing provision	RCRA citation	**Federal Register** reference
* *	* *	*	* *
[Date of publication of the final rule in the **Federal Register**].	Standards for the Management of Ignitable Spent Refrigerants Recycled for Reuse.	3001(d)(4), 3004(n)	[**Federal Register** citation of the final rule].

[1] Note that the effective date was changed to Jan. 29, 1986 by the Nov. 29, 1985 rule.
[2] Note that the effective date was changed to Sept. 22, 1986 by the Mar. 24, 1986 rule.

[FR Doc. 2023–22526 Filed 10–18–23; 8:45 am]

BILLING CODE 6560–50–P