

Collins Aerospace

Please see the attached comments submitted by Collins Aerospace.

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Edward F. McHugh
Vice President and Counsel

July 28, 2020

Via Electronic Mail

Linda Kildahl
Rulemaking Lead
Air Quality Program
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Re: Public Comments on Chapter 173-443 WAC Rule Proposal

Dear Ms. Kildahl:

This comment letter is being submitted on behalf of Collins Aerospace in response to the notice of proposed rulemaking for hydrofluorocarbons (HFCs) under Chapter 173-443 of the Washington Administrative Code. We appreciate the opportunity to submit comments on the proposed rules under consideration by the Department of Ecology (Ecology) and ask for your consideration of the points raised below. We further note our support for the similar comments and proposed changes submitted now and previously on March 16, 2020 by The Boeing Company (Boeing) as part of the informal rulemaking process.

I. Background

Collins Aerospace is dedicated to developing solutions for the global aerospace and defense industry. Created in 2018 by uniting UTC Aerospace Systems and Rockwell Collins, the company now has a global presence with approximately 75,000 employees at nearly 300 locations. Our sites in Washington, supporting approximately 1,100 employees, include Everett, Spokane, Federal Way, Bothell and Kirkland. We continue to enhance our investment in these sites and the communities in which we operate.

Our business in Washington is not limited to production at our manufacturing sites. The Collins Aerospace supply chain has deep roots in Washington with more than 400 suppliers and approximately \$386 million in expenditures across them.

In addition, Boeing is one of Collins Aerospace's main customers. Currently, Collins Aerospace is under contract with Boeing on a number of platforms including the Boeing 737, 777 and 787. In the context of



those contracts, we supply airplane equipment that uses R-134a including supplemental cooling units (SCU), cargo refrigeration units (CRU), air “chillers” and beverage “chillers” for both commercial and military airplanes. Selection of particular HFCs for use in our equipment is driven by customer-specified mechanical, electrical and safety requirements and incorporated into our customer contracts.

We direct ship SCUs and CRUs into Washington where they are integrated into the AFT section (contains the SCU) and the mid-body (contains the CRU) sections of aircraft. In addition, we ship both SCUs and CRUs to other states where our products are installed on parts that themselves get shipped into Washington for further assembly.

Air and beverage “chillers” are also direct shipped to Boeing in Washington. Work performed inside Washington on these units includes installation and only minor troubleshooting and repairs. Similar to the CRUs and SCUs, Collins Aerospace also ships air and beverage “chillers” to other states where the equipment is incorporated into parts that are finally assembled in Washington.

Collins Aerospace is committed to protecting the environment and the health and safety of individuals across the globe and we take this commitment seriously. As a global company, we recognize our unique responsibility to partner with the regulators and the communities where we live and work to, among other things, minimize our environmental footprint. To this end, all of our sites are held accountable for meeting sustainability goals for greenhouse gases, water, hazardous/recycled waste and solvent air emissions based on 5-year plans.

II. Proposed Rule

Collins Aerospace has carefully reviewed WAC 173-443 and the proposed rules and does not believe that they were intended to apply to the type of specialized aircraft equipment described above. First, HFC emissions would not be expected to occur during installation, testing, or repair of our equipment in Washington, which is performed by highly skilled and trained mechanics. In addition, Collins Aerospace equipment inside the airplane cabin would not result in HFC emissions under normal operating conditions.

Second, the Collins Aerospace equipment is not introduced into Washington commerce in the sense of other “one-size-fits-all” products that might appear on the shelves of Washington stores or might be sold to a comparatively broad range of commercial customers. It is shipped into Washington where it is installed and tested on commercial and military airplanes. The planes are then sold and transported to airline customers outside Washington for use in federally regulated airspace. Many of these large planes are dedicated to international flights that never cross Washington airspace.

Third, any interpretation of the proposed rules which would require the phase-out of R-134a in our equipment would have significant adverse impacts for the supply of aerospace equipment both inside and outside of Washington. While Collins Aerospace is evaluating substitutes for the R-134a in its equipment, that substitution cannot occur for a period of at least several years. Any such substitution would constitute a design change that would necessitate a long review and approval process, and FAA approval as well as re-certification. Substitution would further be complicated by the fact that Collins Aerospace has in place long term customer contracts with customers across the globe that prevent us from making unilateral substitutions.

Moreover, Collins Aerospace is not currently aware of a ready substitute that would meet the applicable performance and safety criteria in this equipment. Both the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the United States Department of Transportation (DOT) consider HFC-134a to be non-flammable - a key characteristic for use in safe air transportation. In contrast, HFO-1234yf, developed as an alternative to HFC-134a, is not only designated as slightly flammable, but it releases strong, toxic acids when released to the atmosphere or when burned. It would take up to 10 years to be able to develop, test, implement and get approvals to substitute the R-134a in our equipment, and likely longer due to the many constraints resulting from the ongoing COVID-19 pandemic. Mandating a phase-out of R-134a in our aerospace products could result in a supply disruption for both commercial and military applications.

III. Requested Changes

In order to effectuate the presumed intent of the proposed regulations, Collins Aerospace respectfully requests that Ecology consider adopting the changes described below and shown more specifically in redline form in the proposed regulatory text in **Attachment A**.

A. We Request that Ecology Add a Definition of “Stationary” to the Proposed Rules.

The definition of “refrigeration equipment”¹ in the proposed language for WAC 173-443 clarifies Ecology’s intent to regulate HFC-containing equipment at stationary sources. However, because the undefined term “stationary device” is used in that definition instead of “stationary source,” as defined in WAC 173-400-030(91),² the rule could be misinterpreted. Accordingly, we recommend adding the definition of “stationary” set forth below to the proposed rules to both address this ambiguity in the definition of “refrigeration equipment” and clarify the meaning of “stationary” by adding that term in the placed described below in Section III.B. Ecology’s proposed definition of “refrigeration equipment” when coupled with an additional definition of “stationary” would ensure clarity, consistent application, and regulatory certainty.

We note that the Washington Legislature, in passing HB 1112, stated its intent to regulate HFCs in a manner similar to regulations that have been or will be adopted in other states. Making this proposed change implements that legislative intent because it is consistent with the final refrigeration equipment rule in the California code³ that uses the term “stationary device,” along with the following definition of “stationary”:

“Stationary” means the system is (i) installed in a building, structure, or facility; (ii) attached to a foundation, or if not attached, will reside at the same location for more than twelve consecutive months; or (iii) located intermittently at the same facility for at least two consecutive years and operates at that facility a total of at least 90 days each year.

¹ “Refrigeration equipment” means any stationary device that is designed to contain and use refrigerant gas, including but not limited to retail or commercial refrigeration equipment, household refrigeration equipment, and cold storage warehouses.

² Stationary source means any building, structure, facility, or installation which emits or may emit any air contaminant. This term does not include emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in Section 216(11) of the federal Clean Air Act (42 U.S.C., 7550(11)).

³ California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4

Therefore, Collins Aerospace asks Ecology to add the above definition of “stationary” to the final rule.

B. The Word “Stationary” Should Be Added to the Definitions of “Centrifugal Chiller,” “Commercial Refrigeration Equipment,” “Positive Displacement Chiller,” and “Stand-Alone Unit.”

The unique and complex nature of the equipment described above manufactured by Collins Aerospace does not readily allow for classification under the specific end uses identified under Ecology’s program. Accordingly, Collins Aerospace does not believe that the proposed regulations as currently written are applicable to its products. However, this equipment could be misconstrued as falling under certain categories of end uses due to its complexity, resulting in some regulatory uncertainty. To effectuate Ecology’s intent to limit the regulations to “stationary” sources and eliminate any ambiguity, we ask that the term “stationary” be added to the definitions of “centrifugal chiller,” “commercial refrigeration equipment,” “positive displacement chiller,” and “stand-alone unit” as shown in **Attachment A**.

C. Ecology Should Add a Reference to “Chiller-Type Refrigeration Equipment” in the Definition of “Refrigeration Equipment”

In addition to adding “stationary” as a defined term, Collins Aerospace recommends adding the words “chiller-type refrigeration equipment” to the list of examples in Ecology’s proposed definition of “refrigeration equipment.” Adding “chiller-type refrigeration equipment” to the list of examples clarifies that certain items of refrigeration equipment manufactured by Collins Aerospace that are referred to as chillers (though not meeting Ecology’s regulatory definition of “chiller”) are contemplated by the definition of “refrigeration equipment,” and deliberately excluded because they are not “stationary.” Although the draft rules indicate that “refrigeration equipment” is “not limited to” the enumerated items, Collins Aerospace is concerned that the definition could be misconstrued without our proposed clarification.

Therefore, Collins Aerospace asks Ecology to add “chiller-type refrigeration equipment” to the examples listed in the definition of “refrigeration equipment.”

D. Ecology Should Consider Inserting Language Clarifying that Aircraft Components are Outside the Scope of Ecology’s Proposed Rule

The changes described in Sections III.A-III.C above might be unnecessary if a broad statement was included in Section 173-443-020 (Applicability) of the proposed rule stating that the rules are not applicable to aircraft components. Such language would provide a greater measure of regulatory certainty compared with relying exclusively on the recommendations in Sections III.A-III.C, and would be appropriate in light of Ecology’s intent to limit its regulation to stationary sources. Moreover, such a statement in the Applicability section would allow for future changes to these rules without concern for unintentionally broad consequences on the aerospace industry. We note that Ecology has already proposed language that would suffice for these purposes in the labeling requirements of WAC 173-443-070(9), stating “[t]he requirements of this section do not apply to aircraft and aircraft components subject to certification requirements of the Federal Aviation Administration.”



Accordingly, Collins Aerospace respectfully requests that Ecology consider including similar language in the Applicability section of WAC 173-443-020, as follows:

“WAC 173-443-020 Applicability. (1) The requirements of this chapter apply to any person who offers for sale, leases, rents, in- stalls, or otherwise causes to enter into Washington commerce any product or equipment that contains, uses, or will use HFCs or other substitutes for an end-use listed in WAC 173-443-040.

(2) Labeling requirements.

...

(3) The requirements of this chapter do not apply to aircraft and aircraft components subject to certification requirements of the Federal Aviation Administration.”

Again, this change is consistent with the legislative intent to regulate HFCs in a manner similar to regulations that have been or will be adopted in other states. One U.S. Climate Alliance (USCA) member, the State of Colorado, proposed an HFC rule in 2020 that also excludes aircraft and other mobile sources.⁴ Another USCA member, Maryland, noted that “Maryland and other USCA States are not proposing regulation for the mobile sources at this time.”⁵

There are important legal and public policy reasons for a broad exclusion for aircraft. The HFCs used in aerospace systems (e.g., in galleys, cabins, and cargo areas) are critical to meeting strict Federal Aviation Administration (FAA) certification standards for flight safety. This is why Oregon House Bill 4024 in 2020 defined “substitute” to exclude parts subject to FAA certification requirements, in addition to a specific exemption for aircraft fire extinguishing systems. While the aerospace industry is evaluating non-HFC solutions, none have been identified to date. As discussed above, the development/certification process for chemical substitutions for aerospace purposes can take up to a decade, with an anticipated range of more than 5 years in this case - a period of time that is likely to be even longer in light of the ongoing COVID-19 pandemic.

IV. Conclusion

Collins Aerospace appreciates the opportunity to participate in this important rulemaking process and looks forward to working with Ecology. In submitting these comments, Collins Aerospace reserves the right to supplement, amend or otherwise submit additional comments to Ecology on any issues related to this rulemaking. Should you have any questions or concerns about our comments, please do not hesitate to contact Kristen Sherman at (860) 541-0101 or Kristen.Sherman@RTX.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Edward F. McHugh".

Edward F. McHugh

⁴ See Colorado Air Quality Control Commission Economic Impact Analysis for Part B.I. Hydrofluorocarbons in Aerosol Propellants, Chillers, Foam, and Stationary Refrigeration End-Uses (HFC Rule), dated Feb. 20, 2020.

⁵ See Maryland fact sheet on New Regulations under new Chapter COMAR 26.11.33, dated Dec. 2, 2019, available at https://mde.maryland.gov/programs/workwithmde/Documents/AQCAC_HFC12162019.pdf, at 11.

**Chapter 173-443 WAC
HYDROFLUOROCARBONS (HFCs)**

NEW SECTION

WAC 173-443-010 Policy and purpose. (1) Ecology's policy under chapters 70.94 and 43.21A RCW is to provide for the systematic control of air pollution from air contaminant sources. Ecology's policy under chapter 70.235 RCW is to reduce the emissions of greenhouse gases.

(2) This chapter establishes requirements for the transition to less damaging HFCs or suitable substitutes in the air conditioning and refrigeration, aerosol propellant, and foam end-use categories in Washington in a manner similar to rules adopted under EPA's Significant New Alternative Policy (SNAP) program and HFC rules adopted or proposed for adoption by other states around the country (RCW 70.235.080).

NEW SECTION

WAC 173-443-020 Applicability. (1) The requirements of this chapter apply to any person who offers for sale, leases, rents, in- stalls, or otherwise causes to enter into Washington commerce any product or equipment that contains, uses, or will use HFCs or other substitutes for an end-use listed in WAC 173-443-040.

(2) Labeling requirements.

(a) The labeling requirements in WAC 173-443-070 apply to manufacturers of products or equipment that contains, uses, or will use HFCs as of July 28, 2019, or to manufacturers that introduce such products or equipment into Washington commerce after that date.

(b) A manufacturer may apply the applicability determination in (a) of this subsection to separate divisions or similar segments of its business based on the end-use that products associated with each division or similar segmentation are intended to serve.

(3) The requirements of this chapter do not apply to aircraft and aircraft components subject to certification requirements of the Federal Aviation Administration.

NEW SECTION

WAC 173-443-030 Definitions and acronyms. The definitions in this section apply throughout this chapter unless the text clearly indicates otherwise.

"Aerosol propellant" means a liquid or compressed gas that is used in whole or in part, such as a cosolvent, to expel a liquid or other material from the same self-pressurized container or from a separate container.

"Bunstock" or "bun stock" means a large solid box-like structure formed during the production of polyurethane, polyisocyanurate, phenolic, or polystyrene insulation.

"C" means Centigrade.

"Centrifugal chiller" means air conditioning equipment that utilizes a centrifugal compressor in a vapor-compression refrigeration cycle typically used for commercial comfort air conditioning. Under this definition, a centrifugal chiller is a stationary chiller intended for comfort cooling and does not include chillers for industrial process cooling and refrigeration.

"Code" means a collection of letters, numbers, graphics, or symbols that translates into a form that conveys the information provided by a dedicated or existing product label, or that can convey a user or reader to that information through electronic means (such as a QR code).

"Cold storage warehouse" means a cooled facility designed to store meat, produce, dairy products, and other products that are delivered to other locations for sale to the ultimate consumer.

"Commercial refrigeration equipment" means stationary equipment designed to store and display chilled or frozen goods for commercial sale including, but not limited to, stand-alone units, refrigerated food processing and dispensing equipment, remote condensing units, supermarket systems, and vending machines.

"Component" means a part of a refrigeration system including, but not limited to, condensing units, compressors, evaporators, and receivers; and all of its connections and subassemblies, without which the refrigeration system will not properly function or will be subject to failures.

"Dedicated label" means a label adhered or attached to a product, or otherwise included with the product, that is designed to convey required information to the end-user of that product on the inclusion or use of substitutes associated with that product.

"EPA" means the U.S. Environmental Protection Agency.

"Ecology" means the department of ecology.

"End-use" means processes or classes of specific applications within industry sectors including, but not limited to, those listed in WAC 173-443-040.

"Equipment" means a collection of components assembled or manufactured to function together that contains at least one product, or that is in and of itself a product.

"Existing product label" means a label adhered or attached to a product, such as a nameplate or sticker, or to the box or packaging enclosing the product that discloses the substitute contained, used, or to be used in the product.

"F" means Fahrenheit.

"Flexible polyurethane" means a nonrigid synthetic foam containing polymers of urethane radicals including, but not limited to, that used in furniture, bedding, chair cushions, and shoe soles.

"Foam" means a product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening via a chemical reaction or phase transition.

"Foam blowing agent" means a product or substance used to produce the product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening or phase transition.

"Foam system" means a multipart liquid material that expands when mixed to form a solid or flexible substance in which thin films of material separate pockets of gas.

"HFC" means hydrofluorocarbon as the term is defined in RCW 70.235.010.

"Household refrigerators and freezers" means refrigerators, refrigerator-freezers, freezers, and miscellaneous household refrigeration appliances intended for residential use. "Household refrigerators and freezers" does not include "household refrigerators and freezers - Compact," or "household refrigerators and freezers - Built-in."

"Household refrigerators and freezers - Built-in" means any refrigerator, refrigerator-freezer or freezer intended for residential use with 7.75 cubic feet or greater total volume and twenty-four inches or less depth not including doors, handles, and custom front panels; with sides which are not finished and not designed to be visible after installation; and that is designed, intended, and marketed exclusively to be: Installed totally encased by cabinetry or panels that are attached during installation; securely fastened

to adjacent cabinetry, walls or floor; and equipped with an integral factory-finished face or accept a custom front panel.

"Household refrigerators and freezers - Compact" means any refrigerator, refrigerator-freezer or freezer intended for residential use with a total refrigerated volume of less than 7.75 cubic feet (220 liters).

"Integral skin polyurethane" means a synthetic self-skinning foam containing polymers of urethane radicals including, but not limited to, that used in shoe soles and car steering wheels.

"MDI" means metered dose inhaler or medical dose inhaler. "Manufacturer" means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses HFCs or is an importer or domestic distributor of such a product (RCW 70.235.010).

"New" means:

(a) Products or equipment that are manufactured after the effective date of this chapter;

(b) Products or equipment first installed for an intended purpose with new or used components;

(c) Products or equipment expanded by the addition of components to increase system capacity after the effective date of this chapter; or

(d) Products or equipment replaced or cumulatively replaced such that the cumulative capital cost after the effective date of this chapter of replacement exceeds fifty percent of the capital cost of replacing the whole system.

"Nonretail foam products" means products consisting entirely of foam created solely to be an input for another product or manufacturing purpose resulting in another type of product.

"Online disclosure" means disclosing the substitute contained, used, or to be used in products or equipment by ensuring that the information is available on an internet website that is accessible to the public free of charge.

"Owner's manual" means a paper or online instructional book that is available for an end-use product, that provides basic information about the product.

"PSI" means pounds per square inch.

"Person" means an individual, partnership, franchise holder, association, corporation, a state, a city, a county, or any subdivision or instrumentality of the state (RCW 70.235.010).

"Phenolic insulation board and bunstock" means phenolic insulation including, but not limited to, that used for roofing and wall insulation.

"Polyolefin" means foam sheets and tubes made of polyolefin, a macromolecule formed by the polymerization of olefin monomer units.

"Polystyrene extruded boardstock and Billet (XPS)" means a foam formed from polymers of styrene and produced on extruding machines in the form of continuous foam slabs which can be cut and shaped into panels used for roofing, walls, flooring, and pipes.

"Polystyrene extruded sheet" means polystyrene foam including that used for packaging and buoyancy or floatation. It is also made into food-service items, including hinged polystyrene containers (for "take-out" from restaurants); food trays (meat and poultry) plates, bowls, and retail egg containers.

"Polyurethane" means a polymer formed principally by the reaction of an isocyanate and a polyol.

"Positive displacement chiller" means vapor compression cycle chillers that use positive displacement compressors, typically used for commercial comfort air conditioning. Positive displacement chiller in this definition is a **stationary** chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"Product" means an article manufactured or refined for sale that contains or uses a substitute.

"Refrigerant" or "refrigerant gas" means any substance, including blends and mixtures, which is used for heat transfer purposes.

"Refrigerated food processing and dispensing equipment" means retail food

refrigeration equipment that is designed to process food and beverages dispensed via a nozzle that are intended for immediate or near-immediate consumption including, but not limited to, chilled and frozen beverages, ice cream, and whipped cream. This end-use excludes water coolers, or units designed solely to cool and dispense water.

"Refrigeration equipment" means any stationary device that is designed to contain and use refrigerant gas including, but not limited to, retail or commercial refrigeration equipment, household refrigeration equipment, chiller-type refrigeration equipment and cold storage warehouses.

"Remote condensing units" means retail refrigeration equipment or units that have a central condensing portion and may consist of one or more compressors, condensers, and receivers assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

"Retail foam products" means products consisting entirely of foam that are created for the purpose of selling or otherwise providing that product in a finished state that does not involve any additional manufacturing or refinement.

"Retrofit" 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, orings, or appliance components (RCW 70.235.010).

"Rigid polyurethane and polyisocyanurate laminated boardstock" means laminated board insulation made with polyurethane or polyisocyanurate foam, including that used for roofing and walls.

"Rigid polyurethane appliance foam" means polyurethane insulation foam in domestic appliances.

"Rigid polyurethane commercial refrigeration and sandwich panels" means polyurethane insulation for use in walls and doors, including that used for commercial refrigeration equipment, and used in doors, including garage doors.

"Rigid polyurethane high-pressure two-component spray foam" means a foam product that is pressurized 800-1600 psi during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and is blown and applied in situ using high-pressure pumps to propel the foam components, and may use liquid blowing agents without an additional propellant.

"Rigid polyurethane low-pressure two-component spray foam" means a foam product that is pressurized to less than 250 psi during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and are typically applied in situ relying upon a gaseous foam blowing agent that also serves as a propellant so pumps typically are not needed.

"Rigid polyurethane marine flotation foam" means buoyancy or flotation foam used in boat and ship manufacturing for both structural and flotation purposes.

"Rigid polyurethane one-component foam sealants" means a foam packaged in aerosol cans that is applied in situ using a gaseous foam blowing agent that is also the propellant for the aerosol formulation.

"Rigid polyurethane slabstock and other" means a rigid closed-cell foam containing polymers of urethane radicals formed into slab-stock insulation for panels and pipes.

"Stand-alone low-temperature unit" means a stand-alone unit that maintains food or beverages at temperatures at or below 32°F (0°C).

"Stand-alone medium-temperature unit" means a stand-alone unit that maintains food or beverages at temperatures above 32°F (0°C).

"Stand-alone unit" means stationary retail refrigerators, freezers, and reach-in coolers (either open or with doors) where all refrigeration components are integrated and, for the smallest types, the refrigeration circuit is entirely brazed or welded. These systems are fully charged with refrigerant at the factory and typically require only an electricity supply to begin operation.

"Stationary" means the system is (i) installed in a building, structure,

or facility; (ii) attached to a foundation, or if not attached, will reside at the same location for more than twelve consecutive months; or (iii) located intermittently at the same facility for at least two consecutive years and operates at that facility a total of at least 90 days each year.

"Substitute" means a chemical, product substitute, or alternative manufacturing process, whether existing or new, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function including, but not limited to, hydrofluorocarbons. "Substitute" does not include 2-BPT or any compound as applied to its use in aerospace fire extinguishing systems (RCW 70.235.010).

"Supermarket systems" means multiplex or centralized retail food refrigeration equipment systems designed to cool or refrigerate, which operate with racks of compressors installed in a machinery room and which includes both direct and indirect systems.

"Symbol" means a graphical or hybrid word-graphical symbol for the purposes of conveying the types of substitutes used in the product or equipment and signaling that further information on the use of substitutes is available through online disclosure.

"Unit" means a collection of like products bundled together for purposes of commerce.

"Unit label" means a label adhered or attached, or capable of being adhered or attached, to a collection of like products bundled together for purposes of commerce.

"Vending machine" means a self-contained unit that dispenses goods that must be kept cold or frozen.

NEW SECTION

WAC 173-443-040 List of prohibited substitutes. (1) The tables in this section list substitutes prohibited in specific end-uses and the effective date of prohibition, unless an exemption is provided for in WAC 173-443-050.

(2) Prohibitions for the aerosol propellants end-use category.

End-Use Category: Aerosol Propellants		
End-Use	Prohibited Substitutes	Effective Date
Aerosol propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC-134a	January 1, 2020

(3) Prohibitions for the air conditioning end-use category.

End-Use Category: Air Conditioning		
End-Use	Prohibited Substitutes	Effective Date
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC-245fa, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A, R-424A, R-434A, R-438A, R-507A, RS-44 (2003 composition), THR-03	January 1, 2024
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 composition), SP34E, THR-03	January 1, 2024

(4) Prohibitions for the refrigeration end-use category.

End-Use Category: Refrigeration		
End-Use	Prohibited Substitutes	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R-428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers – Compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Household refrigerators and freezers – Built-in appliances (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2023
Supermarket systems (retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2020
Supermarket systems (new)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2020

End-Use Category: Refrigeration		
End-Use	Prohibited Substitutes	Effective Date
Remote condensing units (retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2020
Remote condensing units (new)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2020
Stand-alone units (retrofit)	R-404A, R-507A	January 1, 2020
Stand-alone medium-temperature units (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2020
Stand-alone low-temperature units (new)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2020
Refrigerated food processing and dispensing equipment (new)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Vending machines (retrofit)	R-404A, R-507A	January 1, 2022
Vending machines (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	January 1, 2022

(5) Prohibitions for the foams end-use category.

End-Use Category: Foams		
End-Use	Prohibited Substitutes	Effective Date
Rigid polyurethane and polyisocyanurate laminated boardstock	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2020
Flexible polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2020
Integral skin polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Polystyrene extruded sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Phenolic insulation board and bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2020
Rigid polyurethane slabstock and other	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Rigid polyurethane appliance foam	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Rigid polyurethane commercial refrigeration and sandwich panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020
Rigid polyurethane marine flotation foam	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2020

End-Use Category: Foams		
End-Use	Prohibited Substitutes	Effective Date
Polystyrene extruded boardstock and billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, Formacel Z-6	January 1, 2021
Rigid polyurethane high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2020
Rigid polyurethane low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021
Rigid polyurethane one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2020

NEW SECTION

WAC 173-443-050 Exemptions. The following table lists exemptions to the prohibitions in WAC 173-443-040.

End-Use Category	Prohibited Substitutes	Acceptable Uses
Aerosol propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA- approved MDIs for medical purposes; wound care sprays; topical coolant sprays for pain relief; products for removing bandage adhesives from skin; bear spray; and pepper spray.
Aerosol propellants	HFC-227ea and blends of HFC-227ea and HFC-134a	FDA-approved MDIs for medical purposes.
Air conditioning	HFC-134a	Military marine vessels where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Air conditioning	HFC-134a and R-404A	Human-rated spacecraft and related support equipment where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Foams – Except rigid polyurethane spray foam	All substitutes	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except rigid polyurethane spray foam	All substitutes	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.

End-Use Category	Prohibited Substitutes	Acceptable Uses
Rigid polyurethane two-component spray foam	All substitutes	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.

NEW SECTION

WAC 173-443-060 Prohibitions. (1) No person may offer for sale, lease, rent, install, or otherwise cause to enter into Washington commerce any product or equipment that contains, uses, or will use HFCs or other substitutes prohibited for an end-use in WAC 173-443-040 unless an exemption is provided for in WAC 173-443-050.

(2) Products and equipment manufactured prior to the applicable effective date of a prohibition in WAC 173-443-040 may be sold, leased, rented, or otherwise introduced into Washington commerce after the date of prohibition.

(a) For products and equipment imported from outside the United States, the date of import may be considered the date of manufacture.

(b) For refrigeration equipment and chillers, the date the manufacturer affixed an equipment label indicating the equipment's date of manufacture is the date of manufacture.

(c) Spray foam systems manufactured (blended) before an applicable prohibition date and not yet applied on site may be used after the prohibition date.

(3) Except where an existing system is retrofit, nothing in this chapter requires a person that acquired a product or equipment containing or using a prohibited substitute prior to the effective date of a prohibition in WAC 173-443-040 to cease use of that product or equipment.

NEW SECTION

WAC 173-443-070 Product labeling and disclosure requirements.

(1) Except for products and equipment that use prohibited substitutes for an acceptable use listed in WAC 173-443-050, a manufacturer must disclose the substitutes contained, used, or to be used in its products or equipment applicable to the end-uses listed in WAC 173-443-040.

(2) This disclosure must occur no later than one year following an applicable prohibition date, or no later than one year following the effective date of this chapter.

(3) A manufacturer of aerosol propellant products must disclose the substitutes through one of following methods:

(a) For aerosol products regulated by the U.S. Food and Drug Administration excluding prescription drug products, the U.S. Consumer Product Safety Commission, or products that are not covered by (b) of this subsection:

- (i) New dedicated label;
- (ii) Existing product label;
- (iii) On-packaging label;

(iv) On-product symbol or code; and online disclosure; or

(v) On-packaging symbol or code; and online disclosure.

(b) For aerosol products regulated by EPA under the Federal Insecticide Fungicide and Rodenticide Act, aerosol products regulated by the Occupational Safety and Health Administration, or aerosol prescription drug products regulated by the U.S. Food and Drug Administration:

(i) Any option in (a)(i) through (v) of this subsection; or

(ii) A product document, such as a Safety Data Sheet (SDS), that complies with the 29 C.F.R. 1910.1200; and online disclosure if the SDS is not posted online.

(4) A manufacturer of refrigeration products and equipment (including refrigeration products and equipment that contain foam) must disclose the substitutes through one of following methods:

(a) For the refrigerant used in household refrigerators and freezers, household refrigerators and freezers - Compact, and household refrigerators and freezers - Built-in:

(i) New dedicated label;

(ii) Underwriters Laboratories or equivalent safety label; or

(iii) On-product or on-equipment symbol or code; and online disclosure.

(b) For the foam blown in or installed by the manufacturer of household refrigerators and freezers, household refrigerators and freezers - Compact, and household refrigerators and freezers - Built-in:

(i) New dedicated label;

(ii) Underwriters Laboratories or equivalent safety label;

(iii) Owner's manual; or

(iv) On-product or on-equipment symbol or code; and online disclosure.

(c) For the refrigerant used in commercial refrigeration equipment:

(i) New dedicated label;

(ii) Existing product label;

(iii) Underwriters Laboratories or equivalent safety label; or

(iv) On-product or on-equipment symbol or code; and online disclosure.

(d) For the foam blown in or installed by the manufacturer of commercial refrigeration equipment:

(i) New dedicated label;

(ii) Existing product label;

(iii) Underwriters Laboratories or equivalent safety label;

(iv) Owner's manual; or

(v) On-product or on-equipment symbol or code; and online disclosure.

(5) A manufacturer of centrifugal or positive displacement chillers must disclose the substitutes through one of following methods:

(a) For the refrigerant used in centrifugal and positive displacement chillers:

(i) New dedicated label;

(ii) Existing product label;

(iii) Underwriters Laboratories or equivalent safety label; or

(iv) On-product or on-equipment symbol or code; and online disclosure.

(b) For the foam blown in or installed by the manufacturer of centrifugal and positive displacement chillers:

(i) New dedicated label;

- (ii) Existing product label;
- (iii) Underwriters Laboratories or equivalent safety label;
- (iv) Owner's manual; or
- (v) On-product or on-equipment symbol or code; and online disclosure.

(6) A manufacturer of foam products must disclose the substitutes through one of following methods:

(a) For nonretail foam products:

(i) Unit label; or

(ii) One of the following methods for each individual product within a unit:

(A) New dedicated label;

(B) Existing product label;

(C) A label required by another jurisdiction with sufficient HFC disclosure requirements; and online disclosure; or

(D) On-product symbol or code; and online disclosure.

(b) For retail foam products:

(i) New dedicated label;

(ii) Existing product label;

(iii) On-packaging label;

(iv) A label required by another jurisdiction with sufficient HFC disclosure requirements; and online disclosure;

(v) On-product symbol or code; and online disclosure; or

(vi) On-packaging symbol or code; and online disclosure.

(c) For the foam blowing agent used in spray foam:

(i) New dedicated label on the canister or cylinders;

(ii) Existing product label on the canister or cylinders;

(iii) On-packaging label; or

(iv) On-packaging symbol or code; and online disclosure.

(7) Ecology must approve in advance the use of a symbol or code to comply with this section.

(8) Ecology must approve in advance the use of another jurisdiction's HFC disclosure label.

(9) The requirements of this section do not apply to aircraft and aircraft components subject to certification requirements of the Federal Aviation Administration.

NEW SECTION

WAC 173-443-080 Manufacturer notification. (1) A manufacturer of a product or equipment that contains, uses, or will use HFCs or other substitutes prohibited in WAC 173-443-040 or a representative on behalf of the manufacturer, must report to ecology consistent with WAC 173-443-090 and 173-443-100.

(2) It is only necessary for one person or entity to report with respect to a particular product or equipment.

(3) In the event of a failure by at least one person to provide a complete, accurate, and timely report for a product or equipment within a specific end-use, ecology will require information from the manufacturer associated with the product or equipment in the following order of precedence:

(a) The person or entity that manufactured, produced, or assembled the product or equipment, unless it has no presence in the United States.

(b) The person or entity that marketed the product or equipment under its name or trademark, unless it has no presence in the United States.

(c) The first person or entity, whether an importer or a distributor, that owned the product or equipment in the United States.

(4) This section in no way limits the liability of any manufacturer as defined in WAC 173-443-030 associated with a product or equipment from enforcement under chapter 70.94 RCW.

NEW SECTION

WAC 173-443-090 Initial **notification**. (1) By December 31, 2019, a manufacturer or its representative must provide ecology an initial status notification of the status of all products and equipment within each applicable end-use that contains, uses, or will use HFCs or other substitutes prohibited in WAC 173-443-040.

(2) An initial status notification must include all covered products and equipment that the manufacturer offers for sale, leases, rents, installs, or otherwise causes to enter into Washington commerce.

(3) A manufacturer must submit an initial status notification using ecology's notification form. The current form is available on ecology's website. This initial status notification must provide:

(a) Contact information on the manufacturer.

(b) The name of the party authorized to represent the manufacturer for purposes of providing initial status notifications and status updates.

(c) All products and equipment within an end-use that are applicable to the manufacturer.

(d) Which HFCs or other prohibited substitutes are being used by products or equipment within each applicable end-use.

(e) Signature and certification by the authorized representative for the manufacturer.

NEW SECTION

WAC 173-443-100 Status **update notification**. Within one hundred twenty days after the date of a prohibition in WAC 173-443-040, a manufacturer affected by the prohibition or its representative must provide ecology with an updated status notification using ecology's form. This updated status notification must include:

(1) Whether the manufacturer has ceased the use of HFCs or other substitutes prohibited in WAC 173-443-040 within each applicable end-use.

(2) What, if any, HFCs other prohibited substitutes remain in use.

(3) Updated responses on all information requested in the initial status notification required in WAC 173-443-090.

NEW SECTION

WAC 173-443-110 Severability. If any provision of this chapter or its application is held invalid, the remainder of the chapter or application of the provision is not affected.