# DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

## DIVISION OF AIR QUALITY

Statutory Authority: 7 Delaware Code, Sections 6001(c) and 6010; (7 **Del.C.** §§6001(c) and 6010)

## FINAL

**SECRETARY'S ORDER NO.: 2021-A-0005**

**RE: Approving Final New Regulation: 7 DE Admin. Code 1151: *Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses ("HFC Regulations")***

**Date of Issuance: February 15, 2021**

**Effective Date of the Amendment: March 11, 2021**

**1151 Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses**

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC"), pursuant to 7 *Del.C.* §§6006 and 6010, and all other relevant statutory authority, the following findings of fact based on the record, reasons and conclusions are entered as an Order of the Secretary in the above-referenced promulgation.

**Background, Procedural History and Findings of Fact**

This Order relates to the Department's proposed new regulation to be codified in the Delaware Administrative Code as follows: 7 DE Admin. Code 1151: *Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses* ("HFC Regulation"). The Department's objective of this proposed action is to regulate the use and manufacturing of hydrofluorocarbons ("HFCs") through this promulgation. This regulatory development process was initiated pursuant to the *Governor's Directive on Delaware to Eliminate HFCs to Confront Climate Change* (June 30, 2019), and House Concurrent Resolution 60 (Passed June 30, 2019), requiring the Department to regulate the manufacturing and use of HFCs in Delaware.

The proposed HFC Regulation establishes the prohibitions and requirements for the use and manufacture of HFCs in the State of Delaware, according to their specific end usage, which includes air conditioning and refrigeration equipment, aerosol propellants, and foam-end uses, and adopts specific United States Environmental Protection Agency ("EPA") Significant New Alternatives Policy Program ("SNAP") prohibitions. The proposed new HFC Regulation is also designed to support Greenhouse Gas ("GHG") emission reductions in the State of Delaware, and to offer Delawareans an increasing quality of life through the reduction of air pollution, increased economic opportunities, and mitigation of the detrimental effects of climate change. Currently, through Governor Carney's commitment to participate in achieving the goals of the United States Climate Alliance, Delaware has committed to reduce its GHG emissions by 26 to 28% by 2025, compared to 2005 levels.

As HFC emissions are growing at a rapid rate in Delaware, the proposed new HFC Regulation is an important part of achieving Delaware's GHG reduction goals, as well as mitigating the environmental, social, and health risks related to climate change. Climate change poses a significant threat especially to Delaware as a coastal state, which has the lowest average elevation in the country. Many of Delaware's industries and infrastructure are vulnerable to the effects of climate change, including, but certainly not limited to, tourism, real estate, agriculture, wastewater, and transportation. Further, human health, air and water quality, and ecosystems are all at increasing risk with the strengthening consequences of climate change.

To serve as background, HFCs are gaseous compounds used across various economic sectors in applications for air conditioning, refrigeration, foam-blowing, solvents, and aerosols. HFCs were identified in the 2009 GHG Endangerment Finding by EPA as one of six GHGs in the atmosphere that "threaten the public health and welfare of current and future generations." As noted above, HFC emissions are GHGs that can have a warming effect that is hundreds to thousands times that of carbon dioxide ("$CO_2$").

HFCs were originally introduced as substitution ozone-depleting substances ("ODS"), within the same applications, as part of the phase-out established in accordance with the Montreal Protocol, a landmark multilateral environmental agreement adopted by the United Nations on September 15, 1987 that regulates the production and consumption of nearly 100 man-made chemicals (referred to therein as ODS). When released to the atmosphere, the ODS damage the stratospheric ozone layer, Earth's protective shield that protects humans and the environment from harmful levels of ultraviolet radiation from the sun.

The Montreal Protocol phases down the consumption and production of the different ODS in a stepwise manner, with

different timetables for developed and developing countries. Under this treaty, all parties have specific responsibilities related to the phase out of the different groups of ODS, control of ODS trade, annual reporting of data, national licensing systems to control ODS imports and exports, and other related matters. The treaty evolves over time, in light of new scientific, technical and economic developments, and it continues to be amended and adjusted. Under the Montreal Protocol, chlorofluorocarbons ("CFCs") were recognized as ODS, and the EPA defined a phase-out schedule for the different classes of ODS (Class I and Class II). The phase-out targets the ODS that are produced or imported in the country, and the original schedule was amended over time.

HFCs were developed to address the phase-out of HCFCs[1] (same applications), however, they were recognized as GHGs with high Global Warming Potentials ("GWPs). Because of the increasing urgency of climate action, the Kigali Amendment to the Montreal Protocol requires the participating countries to cut their production and consumption of HFCs by more than 80% by 2050.

While the United States did not ratify the Kigali Amendment, references to the same are contained within both the Department's Technical Support Document and its Regulatory Impact Statement. The reference was made to emphasize the international interest in the phase-down of high GWP HFCs, and to express the need for industry in the United States to adopt similar restrictions to remain competitive while assuring emissions reductions in a critical segment of GHGs.

The EPA sought to phase-down the use and manufacturing of these high GWP pollutants through its SNAP program. On August 8, 2017, the United States Court of Appeals for the District of Columbia Circuit limited EPA's ability to require replacement of HFCs (*Mexichem v. EPA*, No.15-1328, Aug. 8, 2017). The Court subsequently clarified its previous ruling with regard to EPA's authority to require a second substitution in place of HFCs (*Nat.Res.Def. Council v. Wheeler, et al.*, No. 18-1172, April 7, 2020). Although legal actions remain ongoing at the federal level to defend the SNAP rules, state action is required at this time to maintain HFCs' prohibitions schedule, in line with the vacated SNAP rules.

With regard to applicability, the proposed HFC Regulations will establish prohibitions for any person who sells, offers for sale, leases, rents, installs, uses or manufactures in the State of Delaware, any product or equipment that uses a substance in any of the end-uses listed under the list of prohibited substances covered by the proposed regulation. As a flexibility mechanism, the Department has proposed language to allow the use of product or equipment containing a prohibited substance if the product or equipment was acquired prior to the applicable effective date of prohibition, unless an existing system is retrofit. Additionally, the Department has proposed regulatory language to clarify that, unless an operation constitutes a retrofit or reclassifies a system as "new," the proposed HFC Regulations do not prevent the use of a prohibited substance in the servicing, maintenance and repair operations of existing equipment, in any end-use covered by the proposed new regulation. The Department has also proposed language to allow the importation, exportation, installation, and use of product or equipment containing a prohibited substance after the specified date of prohibition, only if the product or equipment was manufactured prior to the applicable date of prohibition.

The Department has listed each prohibited substance and the effective date of its prohibition, according to its specific end-use, in its Technical Support Document dated April 2020 (see p.9, Part III, Section B, Table 2), that was entered into the hearing record ("Record") as one of the Department's Exhibits at the time of the public hearing held on April 23, 2020. The prohibitions and effective dates detailed in the proposed new regulation were informed by the EPA SNAP Rules 20 and 21 (intended phase-down schedule for the different substances), which took into consideration many economic constraints for the industry, along with the availability of viable and cost-effective low GWP alternatives. It should be noted that the prohibition dates were subsequently revised under the proposed new regulation, to accommodate for the time necessitated for the Department's regulatory development process.

Additionally, the Department has allowed a one-year extension (revised to January 1, 2022) for the new vending machine end-use category, before the effective date of prohibition for all substances covered under this end-use. This extension resulted from industry stakeholders informing the Department that the current preferred low GWP refrigerant alternative (R-290) for the vending machine industry is currently designated as a flammable chemical (A-3) by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (“ASHRAE”), Guideline 34. UL[2] 541 and ASHRAE 15 have authority over products containing this chemical and their placement within buildings, and pursuant to these requirements, in the United States, vending machines with any refrigerant other than A1 (non-flammable) classification may not be placed in locations of ingress, egress, hallways, or lobby areas of any buildings, at the risk of

[1] Hydrofluorocarbons (“HFCs”) is defined in Section 3.0 as “a class of greenhouse gases that are saturated organic compounds containing hydrogen, fluorine, and carbon.” Hydrochlorofluorocarbons (“HCFCs”) are not covered under this regulation, and thus were not formally defined within the HFC Regulation. For clarification, however, the EPA defines HCFCs as “a compound consisting of hydrogen, chlorine, fluorine, and carbon. HCFCs contain chlorine, and thus deplete stratospheric ozone, with ozone depletion potentials ranging from 0.01 to 0.1. HCFCs were used in a wide variety of applications, including refrigeration, air conditioning, foam blowing, solvents, and more, and are subject to a phase-out schedule.

[2] UL (Underwriters Laboratories) is a standards-setting organization that develops and publishes consensus standards that guide the safety, performance and sustainability for industries from household appliances to batteries to environment, to cybersecurity to building materials.

severe liabilities in case of incident[3]. During the course of the Department's regulatory development process for this promulgation, the industry informed the Department of the current work with UL and ASHRAE that may allow R-290 to work within the safety standards, by modifying UL541 and ASHRAE 15. For these reasons, the Department is proposing to allow the industry a one-year extension to establish their compliance pathway.

The proposed HFC Regulations also establish disclosure requirements for manufacturers of the products and equipment covered under the new regulation. By requiring a disclosure statement or label to be available to the buyer of products and/or equipment covered under this proposed new regulation, the Department aims to ensure that the buyer can verify that their purchase follows State regulations. Furthermore, in setting the disclosure statement requirements, the Department is proposing language to allow flexibility for managers to comply, while offering customers transparent and easily accessible information regarding their purchase.

The Department has the statutory basis and legal authority to promulgate new regulations, specifically, to regulate the use of HFCs in Delaware with the proposed 7 DE Admin. Code 1151: *Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses*, pursuant to 7 *Del.C.* §§6001(c) and 6010, which authorize the Department to adopt rules to control air pollution as necessary to protect the public health, safety, and welfare. As previously noted, this new regulation was developed by the Department, pursuant to the *Governor's Directive on Delaware to Eliminate HFCs to Confront Climate Change* (June 30, 2019), and House Concurrent Resolution 60 (Passed June 30, 2019), which requires the Department to regulate the manufacturing and use of HFCs in Delaware.

The Department published the initial proposed new HFC Regulations in the April 1, 2020 *Delaware Register of Regulations*. Thereafter, the virtual public hearing regarding this matter was held on April 23, 2020. Members of the public attended the April 23, 2020 virtual public hearing. Due to the level of public interest in this matter, the Record remained open for receipt of public comment subsequent to the hearing through May 31, 2020. All proper notification and noticing requirements concerning this matter were met by the Department. Proper notice of the hearing was provided as required by law.

Written comment was received by the Department concerning this proposed new regulation, during both the pre- and post-hearing phases of this promulgation. Subsequent to the close of the Record, the Department's Division of Air Quality ("DAQ") prepared a Technical Response Memorandum ("TRM"), at the request of Hearing Officer Lisa A. Vest. This TRM, dated June 25, 2020, provides a summary of the comments received by the Department, and responses to the written comments received from the public concerning the proposed new HFC Regulations.

Subsequent to the close of the public comment period, the Polyisocyanurate Insulation Manufacturers Association ("PIMA") provided the DAQ with its comments that were submitted to the EPA regarding the EPA SNAP Proposed Rule 23 (for which a Notice of Proposed Rulemaking was released by EPA on June 12, 2020). These supplemental comments were provided to DAQ by PIMA as a courtesy, so that the Department would be aware of this submission, and to provide DAQ with additional information on not only the proposed EPA SNAP Rule 23, but also PIMA's concerns as to the availability of commercialized products with low GWP formulations for covered end-uses in the global markets. The DAQ provided Hearing Officer Vest with a Supplemental TRM, dated August 5, 2020, for the benefit of the Record generated in this matter, and to specifically acknowledge receipt of PIMA's additional submission regarding this promulgation.

Hearing Officer Vest prepared her Hearing Officer's Report, dated February 8, 2021 ("Report"), which expressly incorporated into the Record the following documents: (a) the Department's revised proposed new HFC Regulation; (b) the Department's Technical Support Memorandum (April 2020); (c) DAQ's initial TRM (June 25, 2020); (d) DAQ's Supplemental TRM (August 5, 2020); and (e) Summary Sheet of all proposed revisions to the HFC Regulations, and attached the same to her Report as Appendices "A" through "E," respectively. The Report documents the proper completion of the required regulatory development process, establishes the Record, and recommends the adoption of the Department's ***revised*** proposed new HFC Regulation, as attached to the Report as Appendix "A."

**Reasons and Conclusions**

The new HFC Regulation proposed by the Department is to establish the prohibitions and requirements for the use and manufacture of HFCs in the State of Delaware, according to their specific end usage, which includes air conditioning and refrigeration equipment, aerosol propellants, and foam-end uses, and to adopt specific EPA SNAP prohibitions. The proposed HFC Regulation is also designed to support GHG emission reductions in the State of Delaware, and to offer Delawareans an increasing quality of life through the reduction of air pollution, increased economic opportunities, and mitigation of the detrimental effects of climate change.

With regard to the comments received by the Department that suggest the proposed new regulation will only add financial burden to Delawareans, DAQ notes in its TRM of June 25, 2020 that many flexible mechanisms have been included in the language of the proposed new regulation to minimize the burden on Delaware's residents and small businesses. First, this regulation does not include recordkeeping requirements, nor does it cover motor vehicle air

[3] UL 541 and ASHRAE 15 refer to specific standards set by external standard-setting organizations (i.e., UL, ASHRAE) that some manufacturers, covered in this regulation, already comply with and that include considerations that informed the rulemaking development (i.e., safety, flammability, and labeling standards).

conditioning end-uses or household equipment. Most of the compliance burdens are expected to rest on manufacturers of the regulated products and equipment, which are, in majority, large enterprises.

Additionally, the proposed new regulation does not require users to cease the use of their equipment or product(s) acquired prior to its effective date of prohibition, unless said equipment is retrofit or classified (or reclassified) as new. The proposed regulation also allows for any covered equipment or product manufactured prior to the applicable effective date of prohibition to be sold, imported, exported, distributed, installed and used after its effective date of prohibition.

Additionally, DAQ's aforementioned TRM notes that the variable difference in capital expenses, when replacing conventional equipment with equipment that is in compliance with the proposed new regulation, is projected to decrease as the economies of scale set in (as the demand for low GWP alternatives grows at the global scale). Thus, most small businesses that will change their equipment as part of the regular life cycle of their operations are likely to pay lower or smaller incremental costs over time. To encourage and accelerate the transition to low GWP, the Department has also designed an incentives program, the *Cool Switch Low Impact Refrigerant Program*, that will help pay the upfront cost of the new or retrofitted equipment using low GWP refrigerants.

Moreover, the aforementioned TRM notes that, according to the EPA SNAP Rules 20 and 21 screening analyses, the probability of having one small business in Delaware incurring costs in excess of 1% or 3% of their revenues, on a population basis, is less than 0.0003%. Based on this estimate, and DAQ's strong stakeholder engagement process which prompted the inclusion of the flexibility mechanisms detailed above, the Department believes that the proposed new HFC Regulation is unlikely to add substantive financial burden to Delawareans.

The written comments received from the regulated community concerning this proposed promulgation are fully responded to, in detail, within DAQ's initial TRM referenced above. It should be noted that the Department will be developing a guidance document to assist the regulated community with regard to compliance issues associated with this new regulation. This guidance document will include, but will certainly not be limited to, the acceptable formats for disclosure statements for the covered end-uses; considerations for the easily recognizable date code formats; and considerations for how to treat the exemptions listed under Section 7.0 (in terms of disclosure statement requirements).

In comments submitted to the Department by the American Chemistry Council ("ACC") Center for the Polyurethanes Industry ("CPI"), suggestions were made for modifications of eleven stated definitions, as contained within the initially proposed HFC Regulations, plus the addition of one new definition. Honeywell Fluorine Products, another commenter that congratulated Delaware's initiative to regulate HFCs in a consistent manner with other States and agreed with the necessity to transition away from high GWP HFCs (and further commented that technologies using environmentally preferable HFC alternatives are often also more energy efficient than traditional systems, thus offering lower customer costs and increased competitiveness), also supported changes to the polyurethane and foam end-uses definitions as suggested by ACC CPI.

Subsequent to the close of the public comment period in this matter, the Department received input from Paul Ashford, an expert from the United Nations Environment Programe's ("UNEP") Foams Technical Options Committee ("FTOC"). Mr. Ashford is also listed as one of the co-authors of the latest 2018 FTOC reports from UNEP. Mr. Ashford has provided DAQ with suggestions that clarify the proposed definitions as set forth in the HFC Regulations. The DAQ's TRM notes that the Department believes other states are in the process of adopting similar regulations that will include these definition clarifications. The TRM further notes that the USCA model rule has also been amended to include these definitions.

In light of the above, the DAQ is recommending revisions be made to the Department's initial proposed HFC Regulation, specifically, to incorporate technical clarifications to the following terms, as requested by the Center for the Polyurethanes Industry, and as verified by the above referenced industry expert: Polyurethane; Flexible Polyurethane; Foam Blowing Agent; Integral Skin Polyurethane; Rigid Polyurethane Appliance Foam; Rigid Polyurethane Commercial Refrigeration and Sandwich Panels; Rigid Polyurethane High-Pressure Two-Component Spray Foam; Rigid Polyurethane Low-Pressure Two-Component Spray Foam; Rigid Polyurethane Marine Flotation Foam; Rigid Polyurethane One-Component Foam Sealants; and Rigid Polyurethane Slabstock and Other.

In addition to requesting the aforementioned definition modifications, ACC CPI further noted that, although they support the "sell-through" provision proposed in subsection 4.1.4 of the proposed regulation, the term "on site" may be too limiting and may not include factory uses of polyurethane systems. The Department agrees with the removal of this term from the above referenced subsection.

As previously noted, a Summary Sheet of all revisions being proposed by DAQ during the post-hearing phase of this promulgation (the revisions to eleven definitions in Section 3.0, the revision of "on site" considerations as set forth in Subsection 4.1.4, and the revisions to the effective dates of prohibition in Section 6.0) is attached hereto as Attachment "E," for ease of reference. I concur with the recommended, non-substantive revisions, as they provide further clarification and a greater understanding of the proposed HFC Regulation for the benefit of the regulated community, for the reasons noted above.

Based on the Record developed by the Department's experts and established by the Hearing Officer's Report, I find that the Department has provided appropriate reasoning regarding the need for the ***revised*** proposed new regulation to be codified in the Delaware Administrative Code as follows: 7 DE Admin. Code 1151: *Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses*, and that the same is well-supported. I further find that the Department's experts fully developed the Record to support adoption of the ***revised*** proposed HFC Regulation, which establishes the

prohibitions and requirements for the use and manufacture of HFCs in the State of Delaware, according to their specific end usage, which includes air conditioning and refrigeration equipment, aerosol propellants, and foam-end uses, and adopts specific EPA SNAP prohibitions. Moreover, the ***revised*** proposed new HFC Regulation is also designed to support GHG emission reductions in the State of Delaware and offers Delawareans an increasing quality of life through the reduction of air pollution, increased economic opportunities, and mitigation of the detrimental effects of climate change, as noted above.

Thus, for the reasons stated above, the recommendations of the Hearing Officer are hereby adopted, and I direct that the revised proposed HFC Regulation be promulgated as final.

In conclusion, the following reasons and conclusions are hereby entered:

1. The Department has the statutory basis and legal authority to act with regard to the ***revised*** proposed 7 DE Admin. Code 1151: *Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses*, pursuant to 7 *Del.C.* §§6001(c) and 6010, which authorize the Department to adopt rules to control air pollution as necessary to protect the public health, safety, and welfare;
2. The Department has jurisdiction under its statutory authority, pursuant to 7 *Del.C.* Chapter 60, to issue an Order adopting the ***revised*** proposed new HFC Regulation as final;
3. The Department provided adequate public notice of the proposed new HFC Regulation and all proceedings in a manner required by the law and regulations. The Department also provided the public with an adequate opportunity to comment on the proposed new HFC Regulation subsequent to the time of the public hearing (through May 31, 2020), in order to consider all public comment on the same before making any final decision;
4. Promulgation of the ***revised*** proposed new HFC Regulation, as set forth herein, will enable the Department to establish the prohibitions and requirements for the use and manufacture of HFCs in the State of Delaware, according to their specific end usage. Furthermore, the ***revised*** proposed new HFC Regulation supports GHG emission reductions in the State of Delaware and offers Delawareans an increasing quality of life through the reduction of air pollution, increased economic opportunities, and mitigation of the detrimental effects of climate change;
5. The Department has reviewed the ***revised*** proposed new HFC Regulation in the light of the Regulatory Flexibility Act, consistent with 29 *Del.C.* Ch. 104, and believes the same to be lawful, feasible, and desirable, that it will not establish reporting requirements or substantive additional costs for individuals or small businesses, and that the recommendations as proposed should be applicable to all Delaware individuals or small businesses equally;
6. The Department's proposed new HFC Regulation, as initially published in the April 1, 2020 *Delaware Register of Regulations*, and then subsequently ***revised*** as set forth in Appendix "A" hereto, is adequately supported, is not arbitrary or capricious, and is consistent with the applicable laws and regulations. Consequently, the same should be approved as a final new regulation, which shall go into effect ten days after publication in the next available issue of the *Delaware Register of Regulations*;
7. The Hearing Officer's Report, including its established Record and the recommended ***revised*** proposed new HFC Regulation, as set forth therein in Appendix "A," are hereby adopted to provide additional reasons and findings for this Order;
8. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and
9. The Department shall submit this Order approving as final the ***revised*** proposed new HFC Regulation to the *Delaware Register of Regulations* for publication in its next available issue and provide such other notice as the law and regulation require, as the Department determines is appropriate.

Shawn M. Garvin
Secretary

## 1151 Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses

### 1.0 Purpose

This regulation establishes the prohibitions and requirements for the use and manufacture of hydrofluorocarbons in the State of Delaware according to their specific end usage (including air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses) and adopts specific United States Environmental Protection Agency Significant New Alternatives Policy Program prohibitions. This regulation is designed to support greenhouse gas emission reductions in the State of Delaware.

### 2.0 Applicability

2.1 This regulation applies to any person who sells, offers for sale, leases, rents, installs, uses, or manufactures in the State of Delaware, any product or equipment that uses a substance in any of the end-uses listed in Section 6.0.

2.2 Any person who manufactures product or equipment covered in the specific end-uses listed in Section 6.0 is subject to disclosure statement requirements, as detailed in subsection 4.2.

2.3 Substances used in end-uses listed in Section 7.0 are exempt from the prohibitions covered in this regulation.

2.4 Severability. Each section of this regulation shall be deemed severable, and in the event that any provision of this regulation is held to be invalid, the remainder of this regulation shall continue in full force and effect.

## 3.0 Definitions

The following terms, when used in this regulation, shall have the following meanings unless the context clearly indicates otherwise. Terms used but not defined herein shall have the meanings given to them in 7 **Del.C.** Ch. 60, 7 **DE Admin. Code** 1101 or the Clean Air Act as amended in 1990, in that order of:

"**Aerosol Propellant**" means a compressed gas that serves to dispense the contents of an aerosol container when the pressure is released.

"**Air Conditioning Equipment**" means chillers, both centrifugal chillers and positive displacement chillers, intended for comfort cooling of occupied spaces.

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

"**Capital Cost**" means an expense incurred in the production of goods or in rendering services, including but not limited to the cost of engineering, purchase, and installation of components or systems, and instrumentation, and contractor and construction fees.

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

"**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.

"**Component**" means a part of a refrigeration system, including but not limited to condensing units, compressors, condensers, 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.

"**Cumulative Replacement**" means the addition of or change in multiple components within a three-year period.

"**Department**" means the State of Delaware Department of Natural Resources and Environmental Control.

"**Effective Date**" or "**Effective Date of Prohibition**" means date after which the prohibitions provided in Section 6.0 go into effect.

"**End-use**" means processes or classes of specific applications within industry sectors, including but not limited to those listed in Section 6.0.

"**Flexible Polyurethane**" means a non-rigid **[~~synthetic~~ polyurethane]** foam **[~~containing polymers created by the reaction of isocyanate and polyol~~]**, including but not limited to that used in furniture, bedding, and chair cushions.

"**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 substance **[~~used to produce the product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening via chemical reaction or phase transition~~ that functions as a source of gas to generate bubbles in the mixture during the formation of foam]**.

"**Global Warming Potential**" or "**GWP**" means a measure of the radiative efficiency (heat-absorbing ability) of a particular gas relative to that of carbon dioxide ($CO_2$) after taking into account the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of $CO_2$. Global warming potentials used in this regulation are consistent with the values used in the Intergovernmental Panel on Climate Change, Fourth Assessment Report.

"**Household Refrigerators and Freezers**" means refrigerators, refrigerator-freezers, freezers, and miscellaneous household refrigeration appliances intended for residential use. For the purposes of this regulation, "household refrigerators and freezers" does not include "household refrigerators and freezers - built-in" or "household refrigerators and freezers - compact".

"**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 24 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:

(1) Installed totally encased by cabinetry or panels that are attached during installation;

(2) Securely fastened to adjacent cabinetry, walls or floor; and

(3) 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).

"**Hydrofluorocarbons**" means a class of greenhouse gases that are saturated organic compounds containing hydrogen, fluorine, and carbon.

"**Integral Skin Polyurethane**" means a **[~~synthetic~~]** self-skinning **[polyurethane]** foam **[~~containing polyurethane polymers formed by the reaction of an isocyanate and a polyol~~]**, including but not limited to that used in car steering wheels and dashboards.

"**MDI**" means a metered dose inhaler or medical dose inhaler or a device that delivers a measured amount of medication as a mist that a patient can inhale, typically used for bronchodilation to treat symptoms of asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and other respiratory illnesses. An MDI consists of a pressurized canister of medication in a case with a mouthpiece.

"**Miscellaneous Residential Refrigeration Appliance**" means a residential refrigeration appliance smaller than a refrigerator, refrigerator-freezer, or freezer; and which includes coolers, cooler compartments, and combination cooler refrigeration or cooler freezer products.

"**Motor-bearing**" means refrigeration equipment containing motorized parts, including compressors, condensers, and evaporators.

"**New**" means products or equipment:

(1) That are manufactured after the effective date of this regulation; or

(2) First installed for an intended purpose with new or used components after the effective date of this regulation; or

(3) Expanded after the effective date of this regulation, to handle an expanded cooling load by the addition of components in which the capacity of the system is increased, including refrigerant lines, evaporators, compressors, and condensers; or

(4) Replaced or cumulatively replaced after the effective date of this regulation, such that the capital cost of replacing or cumulatively replacing components exceeds 50% of the capital cost of replacing the whole system.

"**Phenolic Insulation Board**" means phenolic insulation including but not limited to that used for roofing and wall inslation.

"**Polyolefin**" means foam sheets and tubes made of polyolefin.

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

"**Polystyrene Extruded Sheet**" means polystyrene foam including that used for packaging. 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 regulation is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**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, and cold storage warehouses.

"**Remote Condensing Units**" means retail refrigeration equipment or units that have a central condensing portion and may consist of compressor or compressors, condenser or condensers, and receiver or 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.

"**Residential use**" means use by a private individual of a substance, or a product or equipment containing the substance, in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use within a household for commercial or medical applications is not included in this definition, nor is use in automobiles, watercraft, or aircraft.

"**Retail Food Refrigeration**" or "**Commercial Refrigeration**" means 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.

"**Retrofit**" means to convert a system from one refrigerant to another refrigerant. Retrofitting includes the conversion of the system 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 system components.

"**Rigid Polyurethane and Polyisocyanurate Laminated Boardstock**" means laminated board insulation made with polyurethane or polyisocyanurate foam, including that used for roofing and wall insulation.

"**Rigid Polyurethane Appliance Foam**" means polyurethane **[~~insulation~~]** foam in household appliances **[used for insulation]**.

"**Rigid Polyurethane Commercial Refrigeration and Sandwich Panels**" means polyurethane **[foam, used to provide]** 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 **[liquid polyurethane]** foam **[~~product that is pressurized 800-1600 pounds per square inch (psi) during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side)~~ system sold as two parts (i.e., A-side and B-side) in non-pressurized containers]**; and is **[~~blown and~~ field or factory]** applied in situ using high-pressure **[proportioning]** pumps **[~~to propel the foam components, and may use liquid blowing agents without an additional propellant~~ at 800 - 1600 pounds per square inch (psi) and an application gun to mix and dispense the chemical components]**.

"**Rigid Polyurethane Low-pressure Two-component Spray Foam**" means a **[liquid polyurethane]** foam **[~~product~~ system sold as two parts (i.e., A-side and B-side) in containers]** that is pressurized to less than 250 psi during manufacture**[~~; sold in pressurized containers as two parts (i.e., A-side and B-side)~~ of the system for application without pumps]**; and **[~~are~~ is]** typically applied in situ relying upon a **[liquid blowing agent or]** 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 **[polyurethane]** foam used in boat and ship manufacturing for both structural and flotation purposes.

"**Rigid Polyurethane One-component Foam Sealants**" means a **[polyurethane]** foam **[generally]** 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 **[polyurethane]** foam **[~~containing urethane polymers produced by the reaction of an isocyanate and a polyol and~~]** formed into slabstock insulation for panels and fabricated shapes for pipes and vessels.

"**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 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.

"**Substance**" means any chemical intended for use in the end-uses listed in Section 6.0.

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

"**Use**" means any utilization of any substance, including but not limited to utilization in a manufacturing process or product in Delaware, consumption by the end-user in the State of Delaware, or in intermediate applications in the State of Delaware, such as formulation or packaging for other subsequent applications. For the purposes of this regulation, use excludes residential use, but it does not exclude manufacturing for the purpose of residential use.

"**Vending Machines**" means self-contained commercial food refrigeration equipment that dispense goods that must be kept hot, cold or frozen.

## 4.0 Standards (Requirements)

4.1 Prohibitions

4.1.1 No person may sell, lease, rent, install, use or manufacture in the State of Delaware, any product or equipment using a listed substance for any air conditioning, refrigeration, foam, or aerosol propellant end-use listed as prohibited in Section 6.0, and not exempt by Section 7.0.

4.1.2 Except where an existing system is retrofit, nothing in this regulation requires a person that acquired a product or equipment containing a prohibited substance prior to an effective date of the prohibition in Section 6.0 to cease use of that product or equipment.

4.1.3 This regulation does not prevent the use of a prohibited substance in the servicing, maintenance and repair operations of an existing product or equipment in an end-use listed in Section 6.0, which contains or was designed to contain a prohibited substance, except if the operations constitute a retrofit or reclassifies the system as new.

4.1.4 Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 (including foam systems not yet applied **[~~on site~~]**) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition.

4.2 Disclosure Statement

4.2.1 As of the effective date of prohibition, any person who manufactures for sale in the State of Delaware, products or equipment in the air conditioning, refrigeration, foam, or aerosol propellant end-uses listed as prohibited in Section 6.0, must provide a written disclosure to the buyer, as follows:

4.2.1.1 For motor-bearing refrigeration and air-conditioning equipment that is neither factory-charged nor pre-charged with refrigerant, the required disclosure or label must state:

"This equipment is prohibited from using any substance on the "List of Prohibited Substances" for that specific end-use, in accordance with State regulations for hydrofluorocarbons."

4.2.1.2 Except for products and equipment with existing labeling required by state building codes and safety standards which contain the information required in subsections 4.2.1.2.1 and 4.2.1.2.2, the disclosure or label for refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend should include:

4.2.1.2.1 The date of manufacture; and

4.2.1.2.2 The refrigerant and foam blowing agent the product or equipment contains.

4.2.1.3 For foam products, the disclosure or label should include one of the two alternatives (Alternative 1 or Alternative 2) detailed below:

4.2.1.3.1 Alternative 1

4.2.1.3.1.1 The date of manufacture; and

4.2.1.3.1.2 The foam blowing agent the product contains, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the foam blowing agent the product contains.

4.2.1.3.2 Alternative 2

4.2.1.3.2.1 *"Where sold, compliant with State HFC regulations."*

4.2.1.4 For aerosol propellants, the disclosure or label should include one of the two alternatives (Alternative 1 or Alternative 2) detailed below:

4.2.1.4.1 Alternative 1

4.2.1.4.1.1 The date of manufacture or a date code representing the date, shall be indicated on the label, lid, or bottom of the container. If the manufacturer uses a date code for any product, the manufacturer shall file an explanation of each code to the Department; and

4.2.1.4.1.2 The aerosol propellant the product contains, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the propellant the product contains.

4.2.1.4.2 Alternative 2

4.2.1.4.2.1 *"Where sold, compliant with State HFC regulations."*

## 5.0 [RESERVED]

## 6.0 List of Prohibited Substances

6.1 End-use and prohibited substances

6.1.1 The following table lists prohibited substance in specific end-uses and the effective date of prohibition, unless an exemption is provided for in Section 7.0:

**Table 1. End-use and Prohibited substances**

| End-use Category: Aerosol Propellants | | |
|---|---|---|
| End-use | Prohibited Substances | Effective Date |
| Aerosol Propellants | HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC 134a. | **[~~January 1, 2021~~ September 1, 2021]** |
| **End-use Category: Air Conditioning** | | |
| End-use | Prohibited Substances | Effective Date |
| Centrifugal chillers (new) | FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC245fa, 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, R438A, R-507A, RS-44 (2003 composition), THR-03. | January 1, 2024 |
| Positive displacement chillers (new) | FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/ 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, R438A, R-507A, RS-44 (2003 composition), SP34E, THR-03. | January 1, 2024 |
| **End-use Category: Refrigeration** | | |
| End-use | Prohibited Substances | Effective Date |
| Cold storage warehouses (new) | HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, 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, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (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, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03. | **[~~January 1, 2021~~ September 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, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (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, R428A, R-434A, R-507A | **[~~January 1, 2021~~ September 1, 2021]** |
| 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, 2021~~ September 1, 2021]** |

| | | |
|---|---|---|
| Remote Condensing Units (Retrofit) | R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A. | **[~~January 1, 2021~~ September 1, 2021]** |
| 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, 2021~~ September 1, 2021]** |
| Stand-Alone Units (Retrofit) | R-404A, R-507A. | **[~~January 1, 2021~~ September 1, 2021]** |
| Stand-Alone Medium-Temperature Units (New) | FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R422D, R-424A, R-426A, R-428A, R-434A, R-437A, R438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03. | **[~~January 1, 2021~~ September 1, 2021]** |
| 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, R422A, R-422B, R-422C, R-422D, R-424A, R-428A, R434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation). | **[~~January 1, 2021~~ September 1, 2021]** |
| 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, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation). | **[~~January 1, 2021~~ September 1, 2021]** |
| Vending Machines (Retrofit) | R-404A, R-507A. | **[~~January 1, 2021~~ September 1, 2021]** |
| Vending Machines (New) | FOR12A, FOR12B, HFC-134a, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407C, R-410A, R-410B, R-417A, R-421A, R-422B, R422C, R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E. | January 1, 2022 |
| End-use Category: Foams | | |
| End-use | Prohibited Substances | Effective Date |
| Rigid Polyurethane and Polyisocyanurate Laminated Boardstock | HFC 134a, HFC 245fa, HFC 365mfc, and blends thereof. | **[~~January 1, 2021~~ September 1, 2021]** |
| Flexible Polyurethane | HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof. | **[~~January 1, 2021~~ September 1, 2021]** |
| Integral Skin Polyurethane | HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| Polystyrene Extruded Sheet | HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| Phenolic Insulation Board and Bunstock | HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof. | **[~~January 1, 2021~~ September 1, 2021]** |
| Rigid Polyurethane Slabstock and Other | HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| Rigid Polyurethane Appliance Foam | HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| Rigid Polyurethane Commercial Refrigeration and Sandwich Panels | HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| Polyolefin | HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |

| | | |
|---|---|---|
| Rigid Polyurethane Marine Flotation Foam | HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6. | **[~~January 1, 2021~~ September 1, 2021]** |
| 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~~ September 1, 2021]** |
| Rigid polyurethane (PU) high-pressure two-component spray foam | HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc 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~~ September 1, 2021]** |
| Rigid PU low-pressure two-component spray foam | HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc 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~~ September 1, 2021]** |
| Rigid PU one-component foam sealants | HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc 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~~ September 1, 2021]** |

6.1.2 Proposed Modifications to List of Prohibited Substances

6.1.2.1 A person subject to the list of prohibited substances in Section 6.0 may request that the Department modify the regulation to exempt hydrofluorocarbon blends with a global-warming-potential of 750 or less in rigid polyurethane low-pressure two-component spray foam and polystyrene extruded boardstock and billet (XPS) from the list of prohibited substances in Section 6.0. The request shall contain the following information:

6.1.2.1.1 A detailed description of the end-use category for which the modification is requested; and

6.1.2.1.2 A demonstration that the U.S. EPA has approved the hydrofluorocarbon blend under the Significant New Alternatives Policy under section 7671(k) of the Clean Air Act.

## 7.0 End-use and prohibited substances exemptions

The following table lists exemptions to the prohibitions in Section 6.0:

**Table 2. End-use and Prohibited Substances exemptions**

| End-use category | Prohibited Substances | 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; and products for removing bandage adhesives from skin. |

| | | |
|---|---|---|
| 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 (PU) spray foam | All substances. | 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 (PU) spray foam | All substances. | 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. |
| Rigid polyurethane (PU) two-component spray foam | All substances. | 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. |