Public Workshop: Regulations for the Use and Manufacturing of Hydrofluorocarbons

Listen

DATE & TIME:

Monday, December 9, 2019
6:00 pm

LOCATION:

DNREC Lukens Drive Offices
391 Lukens Dr.
New Castle, Delaware

DETAILS:

DNREC will conduct a public workshop on a draft regulation to regulate the use and manufacturing of hydrofluorocarbons (HFCs) in Delaware.

This regulation will propose the prohibitions of certain substances in air conditioning and refrigeration equipment, aerosol propellants and foam end-uses.

The draft regulatory language will be made available for public review at Department offices located at 715 Grantham Lane, New Castle, DE and 100 West Water Street, Suite 6A, Dover, DE. It will also be made available on DNREC's Regulations and Plans Under Development page.

Please contact Ajo Rabemiarisoa at (302) 739-9402 to make an appointment to inspect the proposed draft regulatory language.

Statements and testimony may be presented either orally or in writing at the public workshops. If you are unable to attend or wish to submit your comments in advance of the public workshops, please submit your written comments to the Responsible Staff Member via either email to ajo.rabemiarisoa@delaware.gov or via USPS at the West Water Street address to the address above.

The Department will accept public comments through the close of business on Friday, January

17, 2020, unless a longer comment period is designated by DNREC staff at the public workshops.

Add event to calendar:

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MAP & DIRECTIONS:

DIVISIONS

- Office of the Secretary
- Environmental Finance
- Division of Community Affairs
- Division of Climate, Coastal, & Energy
- Division of Air Quality
- Division of Water
- Division of Waste and Hazardous Substances
- Division of Fish & Wildlife
- Division of Parks and Recreation
- Division of Watershed Stewardship

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Public Workshop: Regulations for the Use and Manufacturing of Hydrofluorocarbons

Listen

DATE & TIME:

Tuesday, December 10, 2019
6:00 pm

LOCATION:

Carter Partnership Center, Delaware Technical & Community College
21179 College Drive
Georgtown, Delaware

DETAILS:

DNREC will conduct a public workshop on a draft regulation to regulate the use and manufacturing of hydrofluorocarbons (HFCs) in Delaware.

This regulation will propose the prohibitions of certain substances in air conditioning and refrigeration equipment, aerosol propellants and foam end-uses.

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The Department will accept public comments through the close of business on Friday, January 17, 2020, unless a longer comment period is designated by DNREC staff at the public workshops.

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Public Workshop: Regulations for the Use and Manufacturing of Hydrofluorocarbons

Listen

DATE & TIME:

Wednesday, December 18, 2019
10:00 am

LOCATION:

State Street Commons Training Room
100 W. Water Street
Dover, Delaware

DETAILS:

DNREC will conduct a public workshop on a draft regulation to regulate the use and manufacturing of hydrofluorocarbons (HFCs) in Delaware.

This regulation will propose the prohibitions of certain substances in air conditioning and refrigeration equipment, aerosol propellants and foam end-uses.

The draft regulatory language will be made available for public review at Department offices located at 715 Grantham Lane, New Castle, DE and 100 West Water Street, Suite 6A, Dover, DE. It will also be made available on DNREC's Regulations and Plans Under Development page.

Please contact Ajo Rabemiarisoa at (302) 739-9402 to make an appointment to inspect the proposed draft regulatory language.

Statements and testimony may be presented either orally or in writing at the public workshops. If you are unable to attend or wish to submit your comments in advance of the public workshops, please submit your written comments to the Responsible Staff Member via either email to ajo.rabemiarisoa@delaware.gov or via USPS at the West Water Street address to the address above.

The Department will accept public comments through the close of business on Friday, January

17, 2020, unless a longer comment period is designated by DNREC staff at the public workshops.

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DRAFT – For deliberative purposes - for discussion only

TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

PROPOSED REGULATION

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

3/1/2020

1.0 Purpose

1.1 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, installs, uses, or manufactures in the State of Delaware, any substance used in end-uses listed in Section 6.0.

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

2.3 *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. Chapter 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 or bun stock" 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 and/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.

"**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 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.

"**Global Warming Potential (GWP)**" means a measure of the radiative efficiency (heat-absorbing ability) of a particular gas relative to that of carbon dioxide (CO2) 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 CO2. 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 - compact", or "household refrigerators and freezers - built-in."

"**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).

"**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: 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.

"**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 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.

"**Manufacturer**" means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means 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 that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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 insulation.

"**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.

"**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 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(s), condenser(s), and receiver(s) 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 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.

"**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 pounds per square inch (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 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 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.

"**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).

"**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.

3/1/2020

4.0 Standards (Requirements)

4.1 Prohibitions

4.1.1 No person may sell, install, use or manufacture in the State of Delaware, any listed substance for use in 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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray 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 this regulation, any person who manufactures and/or sells 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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

4.2.1.4.2 Alternative 2

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

3/1/2020
5.0 [RESERVED]

3/1/2020
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 and 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
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	January 1, 2022

	formulation), RS-44 (2003 formulation), SP34E, THR-03.	
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
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
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
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A.	January 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
Stand-Alone Units (Retrofit)	R-404A, R-507A.	January 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
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,	January 1, 2021

	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).	
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
Vending Machines (Retrofit)	R-404A, R-507A.	January 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
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
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
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
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

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 modifies the regulation to exclude 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 ~~in certain end-uses~~. 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 ~~or other persuasive rationale for modifying the Regulation~~.

3/1/2020

7.0 End-use and prohibited substances exemptions

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

Table 2. End-use and Prohibited 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.

Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses
Regulation 1151 Rule Development

HFCs Public Workshops

December 9, 2019 at 6:00 pm
December 10, 2019 at 6:00 pm
December 18, 2019 at 10:00 am

Agenda

- Welcome
- Staff Presentation on Background Information and Purpose
- Staff Presentation of the Proposed Regulatory Language
- Open Discussion

MEETING SIGN-IN SHEET

Project:	HFCs Public Workshop	**Meeting Date:**	December 9, 2019
Facilitator:	Ajo Rabemiarisoa & Christian Wisniewski	**Place/Room:**	DNREC Lukens Office

Name	Title	Company	Phone	E-Mail
Stephen Wieroniey	Director Polyurethanes	ACC		Stephen_Wieroniey@americanchemistry.com
Steve Theyel	Wilmington, DE			

MEETING SIGN-IN SHEET

Project:	HFCs Public Workshop	**Meeting Date:**	December 9, 2019
Facilitator:	Ajo Rabemiarisoa & Christian Wisniewski	**Place/Room:**	DNREC Lukens Office

Name	Title	Company	Phone	E-Mail
NANCY HANNIGAN		retired	302-543-6446	njhannigan@yahoo.com
TIM LOVE		BASF	302-268-4106	Tim.Love@BASF.com
JEFF HANSBRO		DuPont	312-497-2968	jeffrey.hansbro@dupont.com

MEETING SIGN-IN SHEET

Project:	HFCs Public Workshop	**Meeting Date:**	December 10, 2019
Facilitator:	Ajo Rabemiarisoa & Christian Wisniewski	**Place/Room:**	GTCC Owens Campus

Name	Title	Company	Phone	E-Mail
James Mutter		Pulkowski	302. 226.8707	jmutter@pgslegal.com
Alex Ayers	Director Gov Affairs	HARDI	515-229-5431	aayers@hardinet.org

MEETING SIGN-IN SHEET

Project:	HFCs Public Workshop	**Meeting Date:**	December 18, 2019
Facilitator:	Ajo Rabemiarisoa & Christian Wisniewski	**Place/Room:**	DNREC State Street Commons

Name	Title	Company	Phone	E-Mail
Christina Banoub	Govt affairs associate	Daikin US		christina.banoub@daikinus.com
Laura Petrillo-Groh		A+HRI		lpetrillo-groh@ahrinet.org
Nicholas Georges		HCPA		ngeorges@hcpa.org
Schuyler Pulley	Regulatory Consultant	Chemours		schuyler.pulley@chemours.com

You might not have the latest participant list because the server is down.

The participant list is now current.

[10:01 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
We will be starting at 10:05am

[10:07 2019/18/12 AM] Dean Groff:
Dean Groff Danfoss

[10:07 2019/18/12 AM] Michael Pennington:
Michael Pennington - Heatcraft

[10:07 2019/18/12 AM] John Gibbons:
John Gibbons, Carrier

[10:07 2019/18/12 AM] Cosby, Ron:
Ron Cosby - Ingersoll Rand

[10:07 2019/18/12 AM] KARPMAN Allen:
Allen Karpman, Arkema

[10:07 2019/18/12 AM] Kane, Jennifer:
Jennifer Kane - AHRI

[10:07 2019/18/12 AM] Bill Sickles:
Bill SIckles, InterMetro

[10:08 2019/18/12 AM] Hershey, Lucas:
PA DEP

[10:08 2019/18/12 AM] Emily Lamb:
Emily Lamb - MassDEP

[10:08 2019/18/12 AM] Mark:
Mark Boncardo - Koura

[10:12 2019/18/12 AM] Justin Koscher, PIMA:
Justin Koscher, PIMA (Polyisocyanurate Insulation Manufacturers Association)

[10:12 2019/18/12 AM] Allan Chara:
Allan Chara, Danfoss

[10:12 2019/18/12 AM] KARPMAN Allen:
is there a presentation?

[10:13 2019/18/12 AM] Chris Forth:
Can you please email me the presentation?

[10:15 2019/18/12 AM] Maureen Beatty:
Maureen Beatty - National Refrigerants

[10:16 2019/18/12 AM] John Gibbons:
We can see slides

[10:16 2019/18/12 AM] KARPMAN Allen:
no, we can't see

[10:16 2019/18/12 AM] Maureen Beatty:
yes we can

[10:17 2019/18/12 AM] Michael Pennington:
I can see the slides

[10:17 2019/18/12 AM] Chris Forth:
I can see the slides

[10:17 2019/18/12 AM] Ben Mathews:
Ben Mathews, Arneg USA

[10:18 2019/18/12 AM] Michael Pennington:
Hard to hear other speakers...

[10:22 2019/18/12 AM] John Gibbons:
Difficult to hear what you just clarified

[10:24 2019/18/12 AM] Chris Forth:
I'm not seeing the slides attached.

[10:25 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
http://www.dnrec.delaware.gov/Air/Documents/under-development/de-reg-1151-update-public-workshop-presentation-december%202019.pdf

The slides should be available via this link. We apologize again for the confusion.

[10:27 2019/18/12 AM] Chris Forth:
Thank you. I was able to download the slides

[10:28 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
Link to draft language:
http://www.dnrec.delaware.gov/Air/Documents/under-development/de-reg-1151-update-public-workshop-agenda-december-2019-edited.pdf

[10:56 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
Just a reminder that there will be a Q&A session at the end of the presentation

[10:57 2019/18/12 AM] Justin Koscher, PIMA:
Should the phone hold comment until the Q&A session?

[10:58 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
You may submit via the chat box as you have them

[10:59 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
We will open the lines at the end of the presentation

[11:11 2019/18/12 AM] Chris Forth:
Please confirm the section 6.0 list for residential limits the scope to SNAP 20 and 21

products.

[11:12 2019/18/12 AM] Helen Walter-Terrinoni:
WHat?

[11:12 2019/18/12 AM] John Gibbons:
Yes, please confirm that the Commercial AC is limited to SNAP 21.

[11:12 2019/18/12 AM] Chris Forth:
To clarify resiential "air conditioning"

[11:12 2019/18/12 AM] Helen Walter-Terrinoni:
THere is a one year extension for flammability for commercial refrigeration that will not be trransitioning to flammable products

??

Am I allowed to speak?

[11:13 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
Yes you are unmuted

[11:18 2019/18/12 AM] Chris Forth:
Can you please confirm the air conditioning products in 6.0 are limited to SNAP 20 and 21 product sectors?

[11:19 2019/18/12 AM] Christina Theodoridi:
Chris, the only air conditioning products regulated in the proposed rule are chillers with an effective date of 2024. Residential ACs are not regulated.

[11:19 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
The end uses for air conditioning are for new centrifugal chillers and positive displacement chillers. The effective date of prohibition for these end uses is January 1, 2024

[11:20 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
Residential AC is not in the end uses in the list of prohibitions

[11:20 2019/18/12 AM] Chris Forth:
Thank you

[11:22 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
We will open the lines. We ask that if you are not commenting, to please mute your lines to limit background noise. Thank you.

[11:23 2019/18/12 AM] Chris Forth:
We can't hear anything now
iin response to the question on stationary ref
Yes

[11:23 2019/18/12 AM] Washington, Kevin:
yes

[11:29 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
https://dnrec.alpha.delaware.gov/air/permitting/under-development/

[11:29 2019/18/12 AM] Victor O Marinich:
Victor Marinich - Danfoss

[11:29 2019/18/12 AM] Chris Forth:
Chris Forth - Johnson Controls, chris.m.forth@jci.com

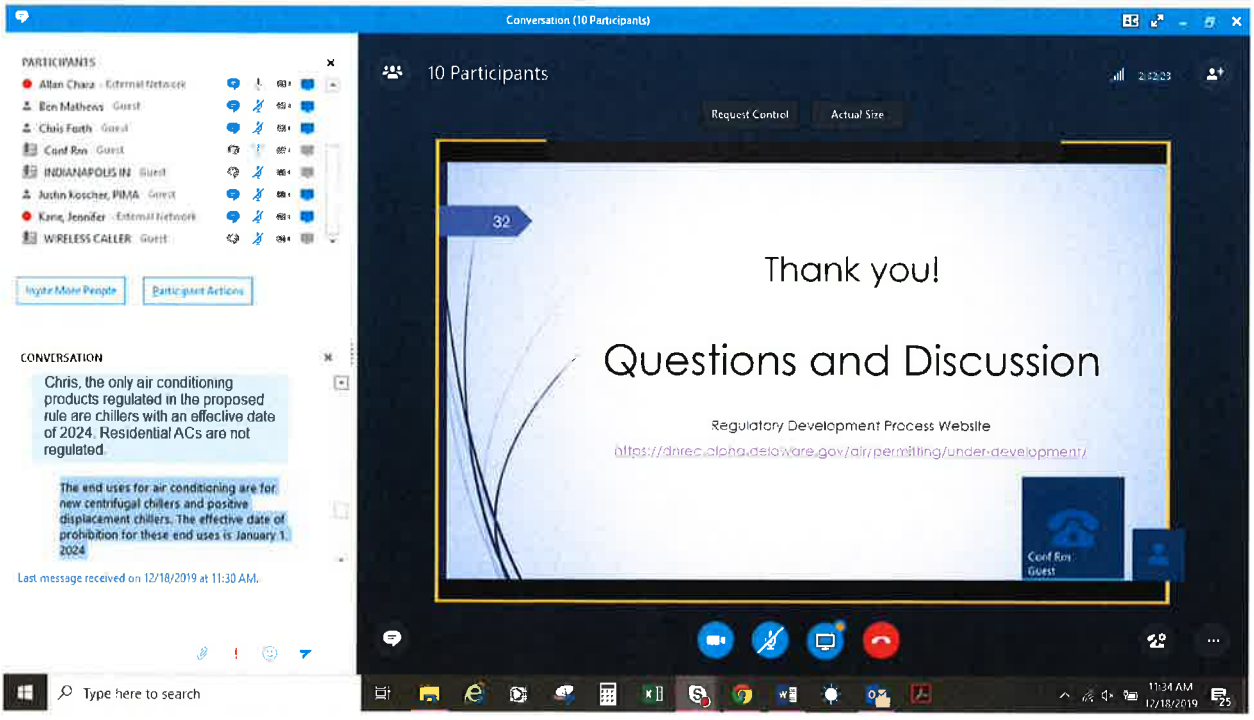
[11:29 2019/18/12 AM] Abbey Brown:
Abbey Brown, Washington Department of Ecology. Thanks, all.

[11:29 2019/18/12 AM] sue ann richardson:
Sue Ann Richardson, MassDEP

[11:30 2019/18/12 AM] Rabemiarisoa, Ajo (DNREC):
Thank you all for you participation

[11:30 2019/18/12 AM] Lauren Slawsky (ODEQ):
Lauren Slawsky, Oregon DEQ

[11:30 2019/18/12 AM] Kildahl, Linda J. (ECY):
Linda Kildahl, WA Dept of Ecology



List of Participants who attended Public Workshops Remotely

- Dean Groff Danfoss
- Michael Pennington - Heatcraft
- John Gibbons, Carrier
- Ron Cosby - Ingersoll Rand
- Allen Karpman, Arkema
- Jennifer Kane - AHRI
- Bill SIckles, InterMetro
- Lucas Hershey, PA DEP
- Emily Lamb - MassDEP
- Mark Boncardo - Koura
- Justin Koscher, PIMA (Polyisocyanurate Insulation Manufacturers Association)
- Allan Chara, Danfoss
- Chris Forth, Johnson Controls, chris.m.forth@jci.com
- Maureen Beatty - National Refrigerants
- Ben Mathews, Arneg USA
- Helen Walter-Terrinoni, AHRI
- Christina Theodoridi, NRDC
- Victor Marinich – Danfoss
- Abbey Brown, Washington Department of Ecology
- Sue Ann Richardson, MassDEP
- Lauren Slawsky, Oregon DEQ
- Linda Kildahl, WA Dept of Ecology

Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses

7 DE Admin Code 1151 – Public Workshop

DNREC – DAQ

Public Workshops

- Division of Waste and Hazardous Substances
  Lukens Drive Office
  391 Lukens Drive, New Caste, DE, 19720
  Conference Room B
  December 9, 2019 at 6:00 pm
- Delaware Technical Community College Owens Campus
  Carter Partnership Center
  21179 College Drive, Georgetown, DE 19947
  Rooms 540 G & H
  December 10, 2019 at 6:00 pm
- Division of Air Quality
  State Street Commons, Suite 6A
  100 W, Water Street, Dover, DE 19904
  Training Room
  December 18, 2019 at 10:00 am

Public Workshop Goals

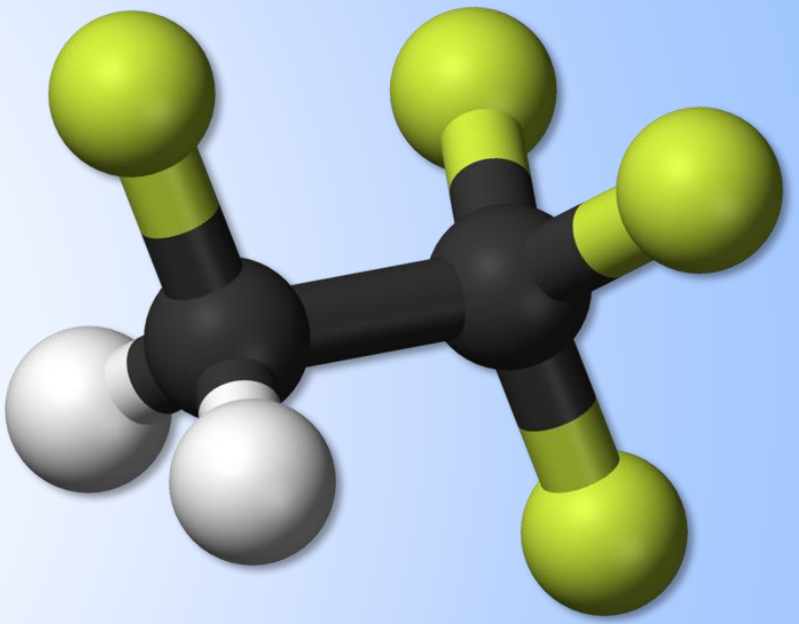
- Inform the public on the background leading to this initiative
- Inform Delaware stakeholders of the content of the proposal *7 DE Admin. Code 1151*
- *Gather additional public comments on specific questions concerning the proposed language.*

Agenda

- Staff Presentation of the background information leading to this effort
- Staff Presentation of the prohibitions and proposal requirements
- *Questions and answers*

Introduction

- Hydrofluorocarbons (HFC) are gaseous organic compounds that contain hydrogen and fluorine atoms
- HFCs are used across sectors in a variety of applications, including:
  - Air conditioning
  - Refrigeration
  - Foam-blowing
  - Solvents
  - Aerosols
- HFCs are predominantly used in cooling and refrigeration



R-134a

Background and Purpose

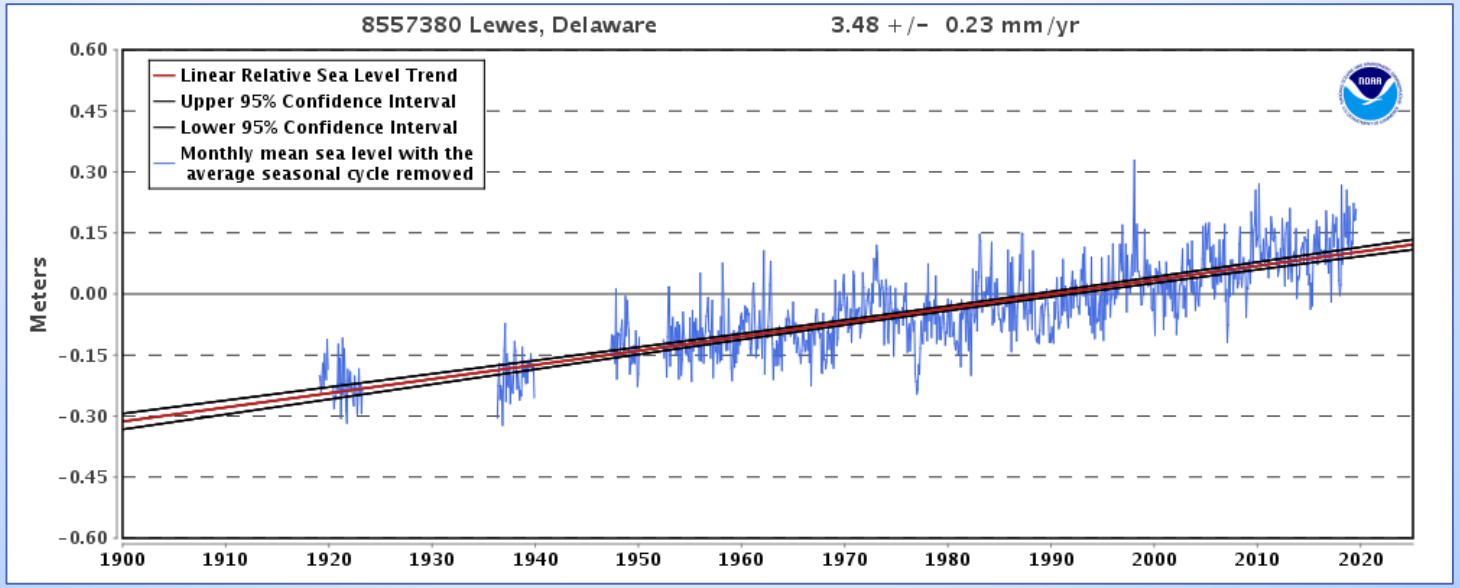
- The rapid and extensive use of HFCs has become a concern
- HFC emissions are highly potent GHGs
- The GWP is a relative factor comparing the climate-based impact to CO_2
  - e.g. 1 lb of HFC-134a emitted has the same warming effect of 1,430 lbs CO_2 emitted
- HFCs are used as single components or as blends in a given application
  - One common refrigerant blend is R-410a; a 50/50 blend of HFC-32 and HFC-125

Gas	GWP (100-yr)
CO_2	1
CH_4	25
N_2O	298
HFC-23	**14,800**
HFC-32	**675**
HFC-125	**3,500**
HFC-134a	**1,430**
HFC-143a	**4,470**
HFC-152a	**124**
HFC-227ea	**3,220**
HFC-236fa	**9,810**
HFC-4310mee	**1,640**
PFCs	7,390-12,200
SF_6	22,800

Source: EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2017; IPCC Fourth Assessment Report (AR4)

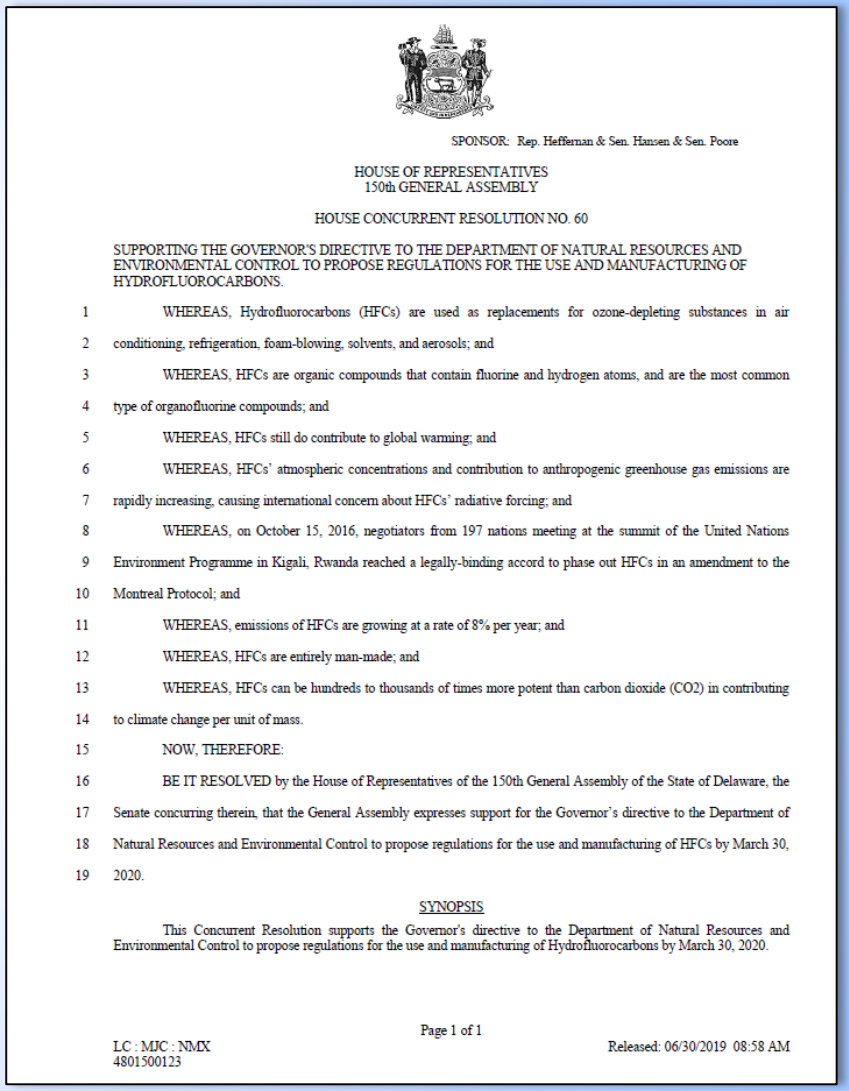
Introduction

- Delaware is already experiencing the effects of climate change
- Increased temperatures pose serious health and economic impacts to farmers, outdoor workers, and sensitive groups such as the elderly and children
- As a low-lying coastal state, Delaware and its citizens and economy are particularly susceptible to sea-level rise
  - Sea levels have already risen by more than 13 inches since 1919, as measured in Lewes, DE
  - Without significant reduction in GHGs, tidal water could inundate as much as 17,000 homes and 500 miles of roadway



Introduction

- Delaware must stay on track to reducing GHG emissions to avoid harmful impacts of climate change
- DNREC was directed by Governor Carney with support of the General Assembly to propose regulations for the **use and manufacturing** of HFCs by March 30, 2020
- House Concurrent Resolution 60 of the 150th General Assembly



SPONSOR: Rep. Heffernan & Sen. Hansen & Sen. Poore

HOUSE OF REPRESENTATIVES
150th GENERAL ASSEMBLY

HOUSE CONCURRENT RESOLUTION NO. 60

SUPPORTING THE GOVERNOR'S DIRECTIVE TO THE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL TO PROPOSE REGULATIONS FOR THE USE AND MANUFACTURING OF HYDROFLUOROCARBONS.

WHEREAS, Hydrofluorocarbons (HFCs) are used as replacements for ozone-depleting substances in air conditioning, refrigeration, foam-blowing, solvents, and aerosols; and

WHEREAS, HFCs are organic compounds that contain fluorine and hydrogen atoms, and are the most common type of organofluorine compounds; and

WHEREAS, HFCs still do contribute to global warming; and

WHEREAS, HFCs' atmospheric concentrations and contribution to anthropogenic greenhouse gas emissions are rapidly increasing, causing international concern about HFCs' radiative forcing; and

WHEREAS, on October 15, 2016, negotiators from 197 nations meeting at the summit of the United Nations Environment Programme in Kigali, Rwanda reached a legally-binding accord to phase out HFCs in an amendment to the Montreal Protocol; and

WHEREAS, emissions of HFCs are growing at a rate of 8% per year; and

WHEREAS, HFCs are entirely man-made; and

WHEREAS, HFCs can be hundreds to thousands of times more potent than carbon dioxide (CO_2) in contributing to climate change per unit of mass.

NOW, THEREFORE:

BE IT RESOLVED by the House of Representatives of the 150th General Assembly of the State of Delaware, the Senate concurring therein, that the General Assembly expresses support for the Governor's directive to the Department of Natural Resources and Environmental Control to propose regulations for the use and manufacturing of HFCs by March 30, 2020.

SYNOPSIS

This Concurrent Resolution supports the Governor's directive to the Department of Natural Resources and Environmental Control to propose regulations for the use and manufacturing of Hydrofluorocarbons by March 30, 2020.

Page 1 of 1

LC : MJC : NMX
4801500123

Released: 06/30/2019 08:58 AM

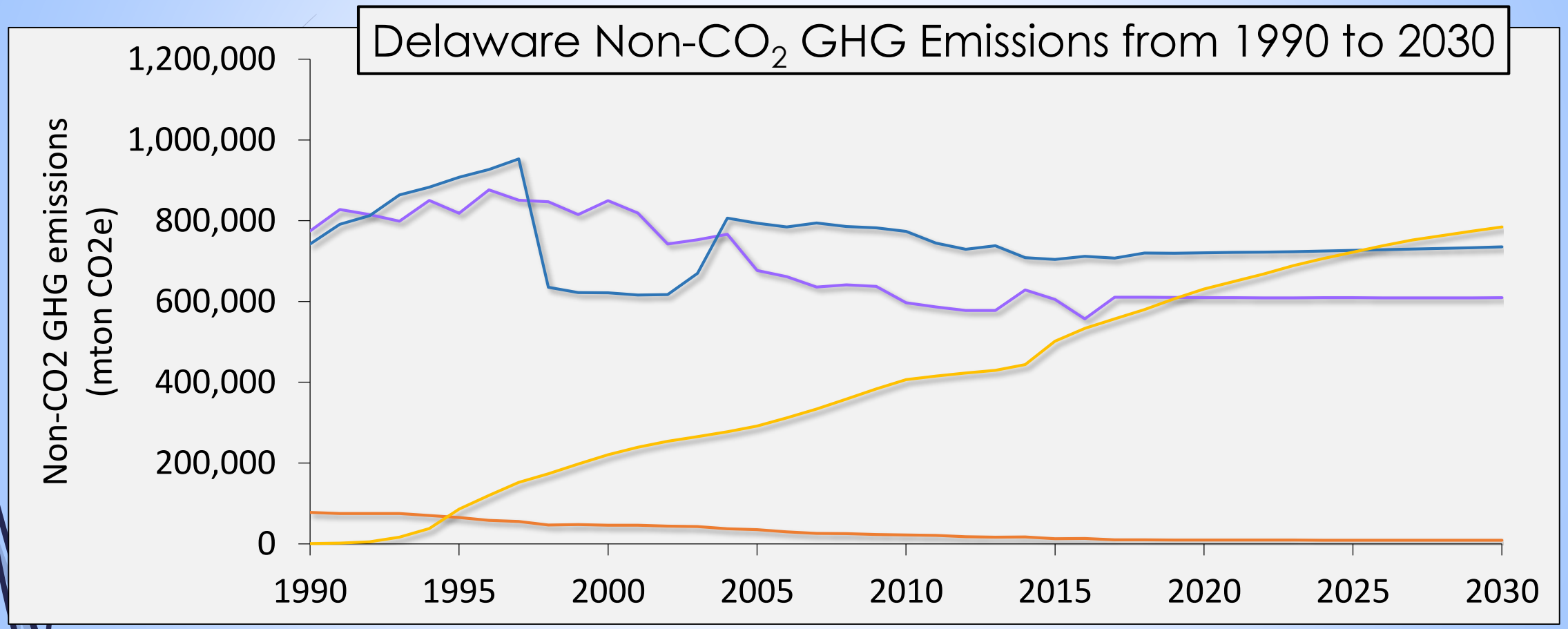
Background and Purpose

- The U.S. EPA had previously sought action to eliminate HFC emissions
- The high-GWP pollutants were listed for phase down schedule under the Significant New Alternative Policy (SNAP) program
- The SNAP program consists of a series of regulations under section 612 of the Clean Air Act
- It requires EPA to evaluate substitutes to ozone depleting substance to reduce overall risk to human health and environment
- EPA listed various HFCs for use as ozone depleting substance substitutes in final rules added under the SNAP program in 2015 and 2016

Background and Purpose

- Federal action through the SNAP program was limited by a court ruling
- Legal action to continue HFC management at the federal level is underway but has no established timeframe
- State action is necessary to limit increasing HFC emissions and he associated harmful climate-based impacts

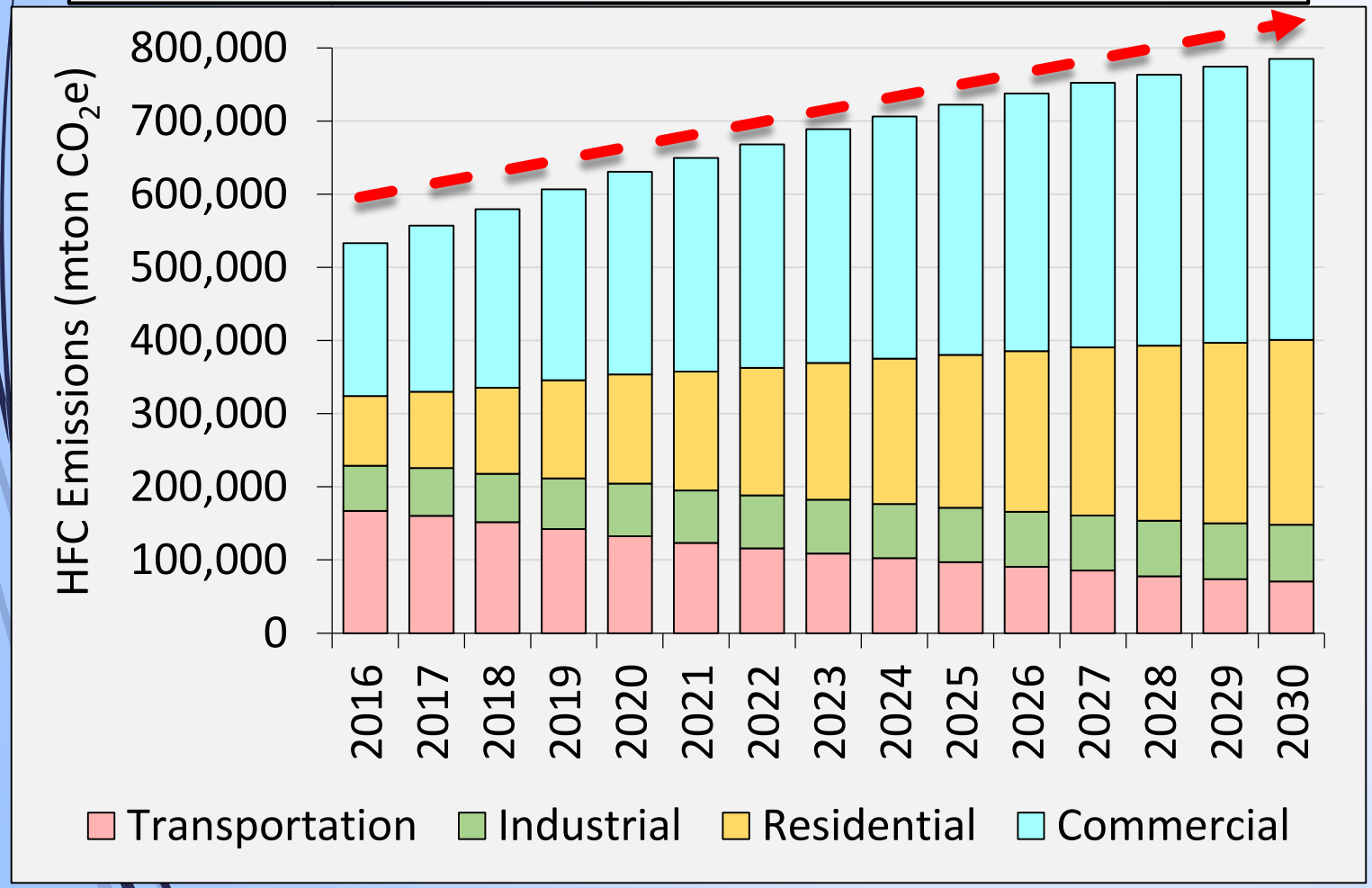
Background and Purpose



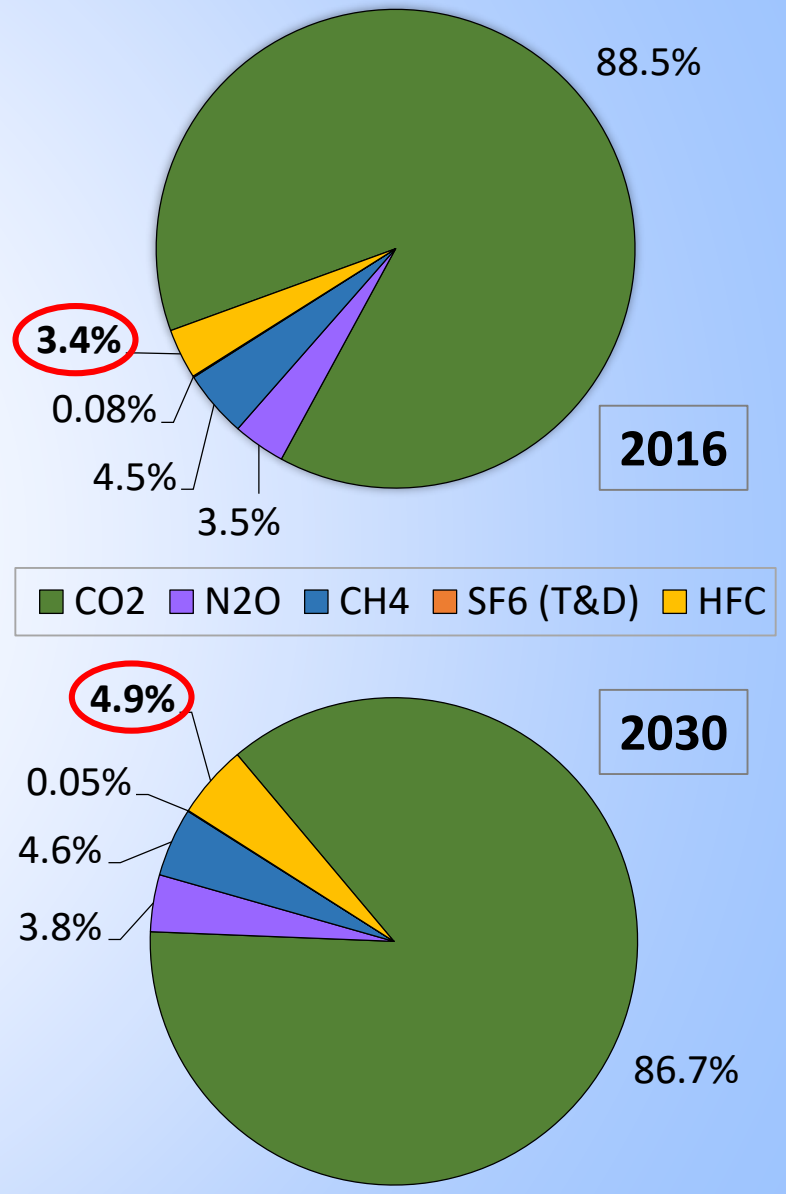
- HFCs are the fastest growing GHG in Delaware
- Emissions are projected to increase by 47% from 2016 to 2030

Background and Purpose

Delaware HFC Emissions by sector from 2016 to 2030



Delaware HFC Emissions by gas



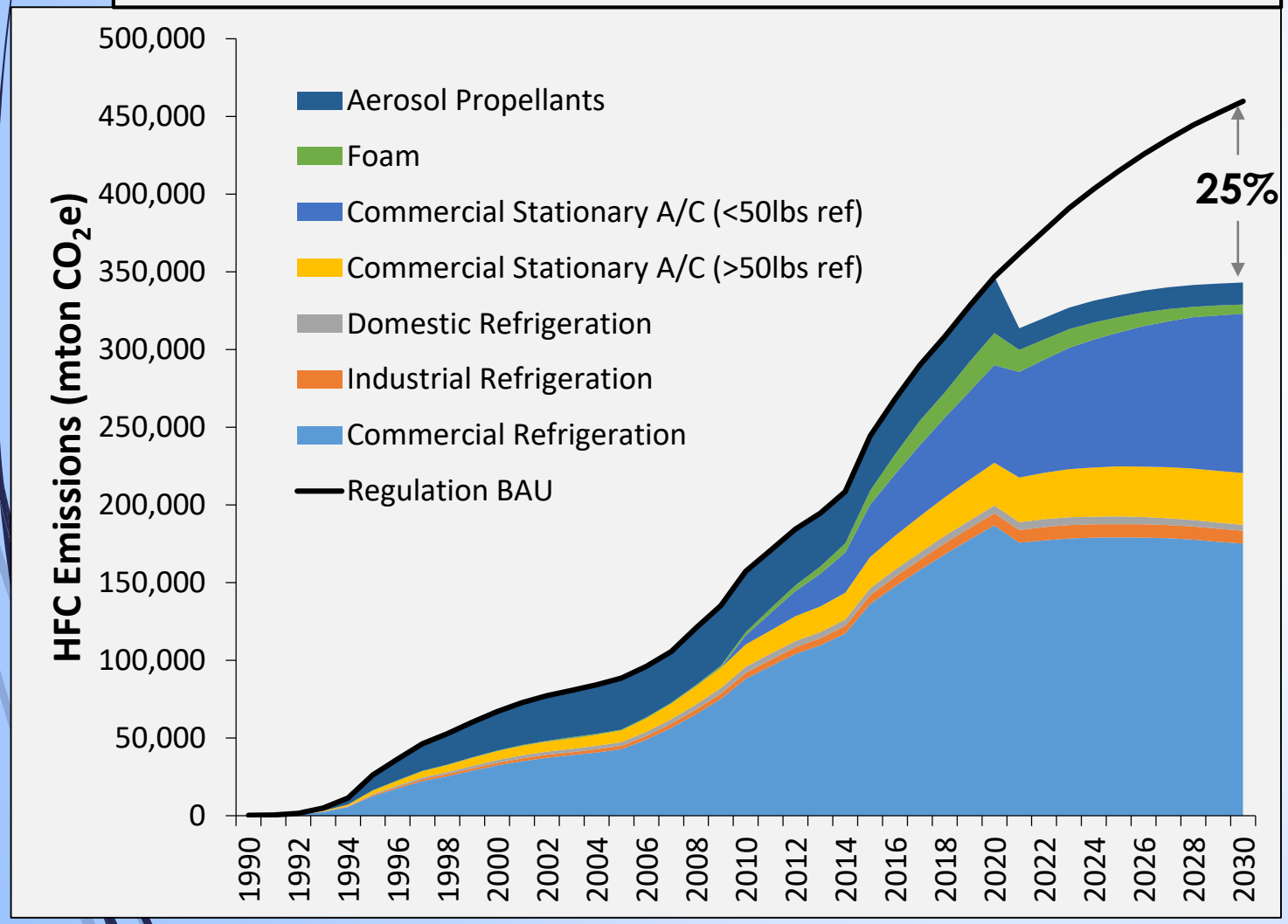
Background and Purpose

- Total HFC emission estimates are calculated for sectors included and not included in this regulation

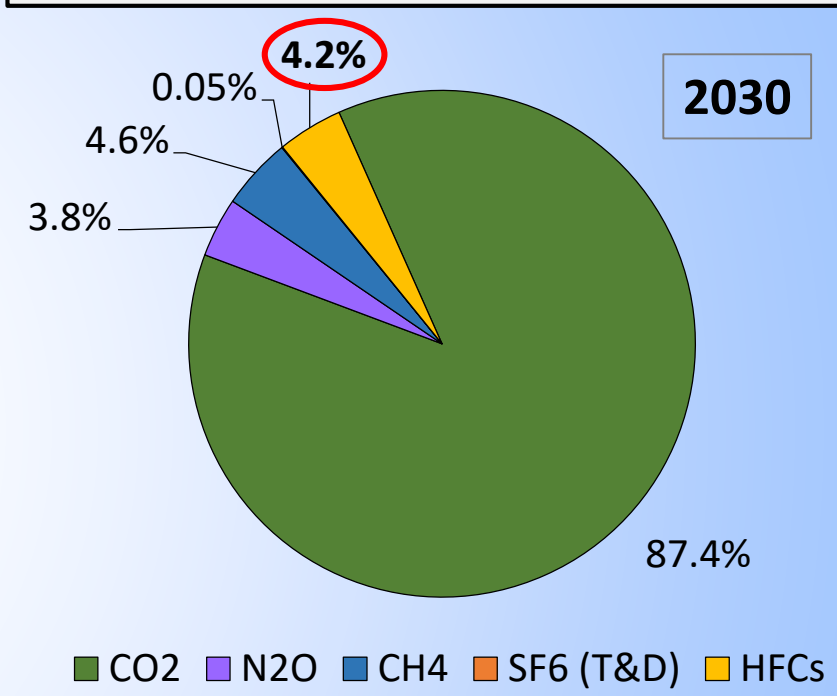
HFC Emissions Sectors		2016 Emissions
Commercial Refrigeration	Included in Regulation	268,000 mtonCO_2e
Industrial Refrigeration		
Domestic Refrigeration		
Commercial Stationary A/C (>50 lb ref)		
Commercial Stationary A/C (<50 lb ref)		
Foam		
Aerosol Propellants		
Other Residential	For future consideration	265,000 mtonCO_2e
Transportation		
Solvents and Fire Suppressant		

Background and Purpose

Delaware HFC Emissions estimates and projections



Delaware HFC Emissions by gas



- Regulated sectors under 1151 see an HFC emissions reduction of **25%** by 2030 compared to the BAU case

Background and Purpose

- Phase-down of high-GWP HFCs is necessary to mitigate the adverse effects of climate change
- Reduction in HFC use will help Delaware achieve its GHG emissions target, set through commitment to the U.S. Climate Alliance
  - 26-28% reduction in GHG emissions from 2005 levels by 2025
- Currently, DE is on track to achieve 16% reduction in GHG emissions in 2025 from 2005 levels
  - Regulation 1151 projects to include an additional **0.5% reduction** by 2025
- Though not quantified, US EPA's initial assessment of the SNAP rules suggests alternative low-GWP refrigerants may achieve increases in energy efficiency

Regulatory Timeline

- Start Action Notice approved August 15, 2019
- Review Committee Meetings – September & October 2019
- Public Workshops – December 2019
  - **Public Comments Period ending on January 17, 2020**
- Initial Publication - March 1st Register
- Public Hearing on the Proposal – TBD, 2020

Draft Regulatory Language

Available on DNREC's Regulatory Development Process Website

https://dnrec.alpha.delaware.gov/air/permitting/under-development/

1.0 Purpose

Page 1 of Draft Language

- **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

Page 1 of Draft Language

- This regulation applies to any person who sells, offers for sale, installs, uses, or manufactures in the State of Delaware, any substance used in end-uses listed in Section 6.0.

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

- ***Request for comments on the regulated activities listed.***

3.0 Definitions

Pages 1-7 of Draft Language

- **Request for further comments on the definitions listed in Section 3.0**
- "***Manufacturer***" *means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.*
- "***New***" *means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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.*
- "***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.*
- **Request for further comments on any missing definitions**

4.0 Standards (Requirements)

Page 7 of Draft Language

- **Prohibitions**

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

- **Existing equipment or product:**

"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."

- **Sell Through Provision:**

"Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray 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

Pages 7-8 of Draft Language

- Intent is to inform the buyer on the product/equipment's compliance
- Significant stakeholder input, highlighting the practical concerns and existing practices in their respective end-uses, was gathered
- Four disclosure statements categories are proposed to address industry concerns:
  - Refrigeration and air-conditioning equipment that are neither factory-charged nor pre-charged with a refrigerant
  - Refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a refrigerant
  - Foam
  - Aerosol propellants
- **Request for further comments on the proposed categories for the Disclosure Statement.**

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 1) For refrigeration and air-conditioning equipment that are neither factory-charged nor pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend:
  - Requirement to include a Disclosure Statement or Label Stating:

"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 Disclosure Statement

Pages 7-8 of Draft Language

- 2) For refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend:
  - Requirement to include a Disclosure Statement or Label Stating:
    - The date of manufacture; and
    - The refrigerant and foam blowing agent the product or equipment contains.
  - **Except** for products and equipment with existing labeling required by state building codes and safety standards which contain the information required

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 3) For foam products
  - Requirement to include a Disclosure Statement or Label Stating:
    - OPTION 1
      - The date of manufacture; and
      - The hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

      OR
    - OPTION 2
      - "Where sold, compliant with State HFC regulations."

- **Request for comments on whether to specify that Option 2 should be a label or a sticker applied to product packaging.**

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 4) Aerosol Propellants
  - Requirement to include a Disclosure Statement or Label Stating:
    - OPTION 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
      - The hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

      OR
    - OPTION 2
      - "Where sold, compliant with State HFC regulations."
  - **Request for further comments on the feasibility of having the MSDS properly referenced to the buyer.**

6.0 List of Prohibited Substances

Table 1 on pages 8-12 of Draft Language

- Cover the following end-use categories:
  - **Aerosol propellants**: Effective Date of Prohibition January 1, 2021
  - **Air Conditioning**: Effective Date of Prohibition January 1, 2024
  - **Refrigeration**:
    - Effective Dates of Prohibition vary between January 1, 2021 to January 1, 2023
  - **Foams**: Effective Date of Prohibition January 1, 2021
- Aligned with EPA SNAP Rules 20 and 21 intended timeline
  - All SNAP effective dates prior to December 31st 2020 were adjusted to January 1st, 2021
  - New vending machines effective date was revised to January 1st, 2022.

6.1.2 Proposed modification to the List of Prohibited Substances

Page 12 of Draft Language

- Industry stakeholder request to include language exempting two foam products, provided that the EPA approves an HFCs blend under SNAP.
- *Proposed Language*

"A person subject to the list of prohibited substances in Section 6.0 of this regulation may request that the Department modifies the regulation to exclude 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. The request shall contain the following information:

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

- ***Request for further comments on the proposed language.***

7.0 End-use and prohibited substances exemptions

Table 2 on pages 14-15 of Draft Language

- List of the Acceptable Uses for Prohibited Substances in End-Use Category
  - Aerosol propellants
  - Air Conditioning
  - Foams – Except Rigid polyurethane (PU) spray foam
  - Rigid polyurethane (PU) two-component spray foam

Please Submit your Comments by COB January 17, 2020

- By email to:

Ajo Rabemiarisoa
ajo.rabemiarisoa@delaware.gov
(302) 739-9402

Christian Wisniewski
christian.wisniewski@delaware.gov
(302) 739-9402

Cool Switch Program – Low Impact Refrigerant Program

Goal

To incentivize the use of refrigerants with lower Global Warming Potential (GWP) refrigerants, to help accelerate the transition away high GWP refrigerants

For questions or additional information,

- Visit: https://dnrec.alpha.delaware.gov/climate-coastal-energy/
- Contact: Ed Synoski, Edward.Synoski@delaware.gov - (302) 735-3358

Thank you!

Questions and Discussion

Regulatory Development Process Website

https://dnrec.alpha.delaware.gov/air/permitting/under-development/

PIMA
POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

3330 Washington Blvd. / Suite 200 / Arlington, VA 22201 / p: 703.258.0093 / www.polyiso.org

Submitted Electronically

October 7, 2019

Delaware Natural Resources and Environmental Control
Division of Air Quality
Attn: Ajo Rabemiarisoa
State Street Commons
100 W. State Street, Suite 6A
Dover, DE 19904
Ajo.Rabemiarisoa@delaware.gov

Re: Public Comments on Proposed Regulation: "1151 Requirements for the Phase-out of Hydrofluorocarbons"
Model Regulation (September 2019)

Dear Mr. Rabemiarisoa:

The Polyisocyanurate Insulation Manufacturers Association ("PIMA") appreciates the opportunity to comment on the Delaware Natural Resources and Environmental Control's ("DNREC") model regulation, Requirements for the Phase-out of Hydrofluorocarbons (dated September 2019).

PIMA represents North American manufacturers of laminated polyisocyanurate insulation board products ("polyiso insulation"). Our members include Atlas Roofing Corporation, Carlisle Construction Materials, Firestone Building Products, GAF, Johns Manville, IKO Industries, Rmax, and Soprema. These manufacturers account for the majority of polyiso insulation produced and sold in North America, including Delaware.

PIMA supports Delaware's efforts to reduce harmful emissions of greenhouse gases. PIMA has been recognized for environmental leadership and our membership aggressively advocates for policies that improve building energy efficiency and reduce emissions associated with the energy used to power our building stock.

As it relates to DNREC's proposed HFC prohibitions, PIMA does not oppose January 1, 2021 as the effective date for the "Rigid Polyurethane and Polyisocyanurate Laminated Boardstock" end-use category. This position is based on the fact that the North American polyiso

industry does not use the prohibited HFC substances as blowing agents in its product formulations.

However, we have concerns with DNREC's proposed disclosure statement (Section 3.2) and recordkeeping (Section 4.0) requirements as applicable to manufacturers of polyiso insulation. Our concerns are outlined below.

I. History of Polyiso Insulation

The polyiso industry is a recognized leader in the manufacture of energy efficient building products and environmental stewardship. The industry has been recognized by the U.S. Environmental Protection Agency ("U.S. EPA") with the Stratospheric Ozone Protection Award for leadership in the phase-out of chlorofluorocarbons and exceptional contributions to global environmental protection. Additionally, the industry was recognized with the U.S. EPA's Climate Protection Award for leadership in promoting energy efficiency and climate protection.

Over the past three decades, the polyiso insulation industry has undertaken research and development of new technology to eliminate the use of ozone depleting pollutants and reduce the global warming impact of its products. **Today, polyiso insulation is manufactured using pentane (or pentane blends) as the blowing agent in the foaming process. Pentane is a non-ozone depleting, low global warming potential substance. The industry completed this transition nearly twenty years ago.** In fact, some polyiso insulation manufacturers have never used hydrofluorocarbon ("HFC") technology.

Pentane offers an economical solution for polyiso insulation products and delivers exceptional thermal resistance that contributes to polyiso insulation's high R-value – the primary physical property for thermal insulation products. Polyiso insulation manufacturers have made significant capital investments in modifying existing facilities and constructing new plants that allow for the safe use of pentane technology in the manufacturing process. It is important to note that polyiso insulation formulations – and the process used to manufacture the product – are optimized for the use of pentane, which may not be a suitable blowing agent substitute for other foam end-uses.

Additionally, as referenced above, polyiso insulation manufacturers have made significant investments in the research and development of product formulations that utilize pentane technology to deliver industry-leading thermal and fire performance in the foam insulation market. From a manufacturing perspective, the prohibited HFC substances are not suitable (or attractive) replacements for polyiso insulation when compared to the performance and economic advantages of pentane-based formulations.

II. PIMA believes that the disclosure statement and recordkeeping requirements are unnecessary as applied to the polyiso insulation end-use and, therefore, requests polyiso insulation manufacturers be exempted from compliance with any requirements.

The proposed disclosure statement and recordkeeping requirements appear to be enforcement tools that would allow DNREC to achieve its stated goal of reducing HFC emissions. However, applying the requirements to specific end-uses that do not use or contain HFC substances will not further the State's goal as there are no emissions reductions available for these end-uses. **Therefore, we propose that DNREC exempt any end-use that categorically does not use or contain any of the prohibited HFC substances by a date certain** (e.g., June 30, 2020, which is six (6) months prior to the earliest date of prohibition listed in the model regulations for the foam end-use sectors).

As described above, the polyiso insulation industry transitioned to pentane technology several decades ago for environmental, economic, and performance reasons. Legacy HFC substances do not present viable or attractive options for polyiso insulation manufacturers now or into the future.

We understand that Delaware may look to other states for model HFC prohibitions and **we believe that Washington State provides a good example for enforcing well-scoped labeling and recordkeeping requirements**. The Washington State Department of Ecology's recent regulatory action exempts from labeling and recordkeeping requirements all end-uses that do not contain, use, or transition away from the prohibited HFC substances prior to December 31, 2019.[1] Importantly, this approach reduces the burden on the state by eliminating end-uses that do not present an opportunity for HFC emissions reductions and allows regulators to focus on managing end-uses that currently manufacture with the prohibited substances.

With respect to the California Air Resources Board's ("CARB") HFC regulations, PIMA opposed the CARB recordkeeping requirement as applied to polyiso insulation manufacturers.[2] Unfortunately, CARB incorrectly grouped the polyiso insulation industry with other manufacturing sectors where HFC substances are either currently used within a particular end-use category or represent a viable (performance or economic) blowing agent solution for the foam end-use category. The polyiso insulation industry does not fit either of these scenarios.

---

[1] Information regarding Washington State's regulatory process is available at: https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/Reducing-greenhouse-gases/Hydrofluorocarbons.

[2] California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4. Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses. Text available at: https://www.arb.ca.gov/regact/2018/casnap/casnap.htm.

It should be noted that the CARB recordkeeping requirement applies only to a limited subset of end-sectors that are covered by the 2018 regulatory action. The California legislature passed a broader HFC emission reduction law that does not include a recordkeeping requirement for many of the SNAP end-use categories listed in the DNREC model regulation. This action speaks to the limited utility of a recordkeeping requirement and, in particular, as applied to end-uses that categorically do not use the restricted HFC substances. Finally, eliminating the recordkeeping requirement will promote consistency throughout regulations authored by members of the U.S. Climate Alliance.

On the issue of product disclosure statements, CARB agreed with PIMA's argument to exclude polyiso manufacturers when it eliminated a proposed labeling requirement for end-uses that categorically do not use HFC substances. **CARB concluded that labeling was unnecessary for end-uses that "have already transitioned out of using HFCs . . . [where] the risk that these end-uses revert to prohibited HFCs is low."**[3] However, again, we believe that CARB erred in its decision to maintain a burdensome recordkeeping requirement as applied to polyiso insulation and respectfully request that Delaware consider a more narrow approach to regulating foam insulation end-uses.

Finally, PIMA is unaware of polyiso insulation products sold into Delaware that are manufactured outside of the North American market. This means there is little to no risk of non-compliant imports being sold into the market. Therefore, the polyiso insulation end-use can be exempt from compliance without interfering with State's enforcement objectives.

As an alternative to a full exemption, we request that any future regulation include an opportunity for polyiso insulation manufacturers to submit a one-time certification to Delaware that their respective products do not contain the prohibited HFC substances. The certification also could be made at the request of, or at a time specified by, the State. This alternative compliance option would provide regulators with direct and immediate assurances that the polyiso insulation end-use market is in full compliance with any future HFC prohibitions.

[3] California Air Resources Board, Notice of Public Availability of Modified Text, Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses (*dated June 15, 2018*). Text available at: https://www.arb.ca.gov/regact/2018/casnap/15daynotice.pdf.

III. Conclusion

We appreciate the opportunity to comment on DNREC's model HFC regulation. Please contact me at jkoscher@pima.org or (703) 224-2289 should additional information be helpful to your deliberative regulatory process.

Respectfully submitted,

Justin Koscher
President

Rabemiarisoa, Ajo (DNREC)

From: Pulleyn, Schuyler E <SCHUYLER.PULLEYN@chemours.com>
Sent: Wednesday, November 13, 2019 3:37 PM
To: Rabemiarisoa, Ajo (DNREC); Wisniewski, Christian (DNREC)
Subject: DE HFC Regulation - Foam Provision

Hi Ajo and Christian,

Based on conversations with Maryland regarding their draft HFC regulation, I understand there are proposed changes to the language pertaining to approving previously prohibited foam blowing agents in two specific foam sectors. The language appears to change the requirement from rulemaking to adopt to the approved substitute to a direct adoption of the approved substitute without rulemaking. We would not support this change. I would be more than happy to have a phone call to further explain our position on this topic.

Best regards,
Schuyler

Schuyler Pulleyn
Regulatory Specialist, Sustainability

The Chemours Company

+1 302 773 2618 **o**
+1 443 786 0145 **m**

From: Olson, Jessica
To: Rabemiarisoa, Ajo (DNREC)
Cc: Chiang, Amy
Subject: Additional Comments
Date: Friday, November 15, 2019 3:48:56 PM

Hi, Ajo,

We understand that there has been a request to modify the draft language on recognizing potential future EPA approvals of foam-blowing agents in XPS and low-pressure spray. (The language is shown below.) We unfortunately cannot support this requested change as it goes much further than the compromise language agreed to by us and other stakeholders for the Washington HFC legislation.

During the legislative discussions in Washington, Honeywell and others compromised with this particular stakeholder to allow for a future additional regulatory process to allow the use of specific types of blowing agents currently prohibited by SNAP rules 20 and 21, if EPA approves them in the future (and certain other conditions are met, as stated below).

With this additional process, the state and all stakeholders would have the ability to weigh in and evaluate whether the prospective EPA approvals are appropriate to allow in states such as Delaware that have made the commitment to implement the transition dates for HFCs in SNAP rules 20 and 21.

We cannot predict with any certainty what form the subsequent EPA approvals would take and thus they should not be automatically recognized by Delaware as is proposed by the modified language. Instead, the state should have a process to determine whether it is appropriate to allow subsequently approved blowing agents that have a higher climate impact (global warming potential) than other currently allowed, approved and available substitutes.

If the conditional language from Washington is not acceptable, our recommendation is to delete the provision altogether. Even without the language, the state remains empowered to consider a future rulemaking to amend the SNAP regulations being adopted now.

We would be happy to discuss further if it is helpful.

Best,
Jes

Legislative language from Washington's HB 1112 that represents a stakeholder compromise:

> *If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystryrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under Section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the department shall expeditiously initiate a rulemaking to conform the requirements established under this*

section with that federal action.

Suggested rewording by another stakeholder that we cannot support:

If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystryrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under Section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the department shall ~~expeditiously initiate a rulemaking to conform~~ consider the blend in compliance with the requirements established under this section ~~with that federal action~~.

Rabemiarisoa, Ajo (DNREC)

From: Nicholas Georges <ngeorges@thehcpa.org>
Sent: Friday, November 15, 2019 1:25 PM
To: Rabemiarisoa, Ajo (DNREC)
Subject: Proposed Language for Disclosure

Hello Ajo,

As we discussed, I've received input from my members on language to suggest based on Maryland's initial proposed language that they had sent to me. I've modified what I just sent to them for you in which I've used Delaware's existing regulation for the date coding rather than Maryland's. Because I don't represent foam products, I've split off the aerosol products from foam, but I have the feeling that my suggestion could also be used for them (or something similar). Still, that would be something to confirm with those that either produce or represent those products. If you have any questions, please do not hesitate to let me know.

Disclosure Statement. As of the effective date listed in Regulation .03B of this chapter, any person who manufactures and sells or introduces into commerce in the State, products or equipment in the air-conditioning, refrigeration, foam, or aerosol propellant end-uses listed in Regulation .03 of this chapter, must provide a written disclosure to the buyer.

(1) For refrigeration and air-conditioning equipment that are not factory-charged or pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend, the 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 hydrofluorocarbon."

(2) For refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend, the disclosure or label should include:

(a) The date of manufacture; and

(b) The refrigerant, foam blowing agent, and any hydrofluorocarbon the product or equipment contains.

(3) For foam ~~and aerosol propellant products~~, a label that includes:

(a) The date of manufacture; and

(b) The hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product

(4) For aerosol propellant products, the prohibited propellant must be listed in a Safety Data Sheet (SDS) that complies with the requirements of the 29 CFR 1910.1200. The person who manufactures and sells or introduces into commerce in the State must also ensure that each aerosol propellant product complies with the product-dating requirements in 7 DE Admin. Code 1141 § 2.5.1.

Nicholas Georges
Senior Director, Scientific & International Affairs
Household & Commercial Products Association

Marriott Harbor Beach Resort & Spa
December 8-11, 2019 | Fort Lauderdale, FL
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Direct: 202-833-7304 - Office: 202-872-8110
Watch Our Story

Rabemiarisoa, Ajo (DNREC)

From: Nicholas Georges <ngeorges@thehcpa.org>
Sent: Friday, November 08, 2019 2:41 PM
To: Rabemiarisoa, Ajo (DNREC)
Subject: HFCs in Aerosol Products - Potential Disclosure Language

Hello Ajo,

It was a pleasure to discuss with you today concerning potential disclosure language in your HFC proposal. In Delaware's *Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products* regulation, section 2.5.1 under Administrative Requirements describes the requirements for the date coding which aerosol manufacturers comply with.

I will follow up with you next week on draft language for aerosol products once I receive member feedback. Until then, if you have any other questions, please do not hesitate to contact me.

Sincerely,

Nicholas Georges
Senior Director, Scientific & International Affairs
Household & Commercial Products Association

1667 K Street NW, Suite 300 | Washington, DC 20006
Direct: 202-833-7304 - Office: 202-872-8110

Rabemiarisoa, Ajo (DNREC)

From: JEANETTE ROBINSON <jnet1515@comcast.net>
Sent: Tuesday, November 19, 2019 4:07 PM
To: Rabemiarisoa, Ajo (DNREC)
Subject: hydrofluorocarbons

Many mistakes have been made in the efforts to make humans more comfortable and to make tasks easier for people. The possible consequences of these technologies were not adequately addressed or were ignored because the potential money and jobs that would result were the major focus.

While many in science and in industry knew decades ago that certain chemicals posed danger to earth's natural systems by raising temperatures of both air and water, executive decisions were based on the profit to be made by selling air conditioning, aerosol sprays , etc. Though many scientists expressed grave concern that adding heat-producing chemicals had potential for destroying earth's ecosystems, chemical companies ignored the warnings.

The climate crisis is apparent now and will continue to worsen. Extinctions are occurring; for example, large numbers of insect species of insects have disappeared along with the birds that had fed on them.

Hydrofluorocarbons and fossil fuel production, including natural gas, have all contributed to the destruction of ecosystems on land and sea, and these products will stay in our atmosphere for a hundred years, according to climatologists.

Immediate action is required. Among those actions should be the prohibition of of these substances which produce Greenhouse Gas.
The sooner we act, the better the chances of mitigating the most dire consequences.

Thank you for understanding why some of us are trying to correct the mistakes of the past in order to give our descendants a chance for a future without climate disasters.

Rabemiarisoa, Ajo (DNREC)

From: Olson, Jessica <Jessica.Olson2@Honeywell.com>
Sent: Wednesday, December 04, 2019 12:53 PM
To: Theodoridi, Christina
Cc: Rabemiarisoa, Ajo (DNREC); Wisniewski, Christian (DNREC); Gray, Valerie A. (DNREC); Pulleyn, Schuyler E
Subject: Re: [External] RE: Delaware HFCs Public Workshops - Draft Language

Hi, Ajo,

We share the concerns raised by Christina and would support the suggested edits to conform the scope of the language to that of the language in other states.

Would also be happy to hop on a call to discuss further.

Thanks!
Jes

On Dec 4, 2019, at 12:28 PM, Theodoridi, Christina <Ctheodoridi@nrdc.org> wrote:

Dear Ajo,

Thank you for sharing the draft proposal.

I would like to raise a concern regarding the addition of section 6.1.2. The section as it is currently drafted will effectively create a backdoor for HFC substitutes that have not been through EPA's evaluation process and/or are no longer prohibited after EPA re-issues regulations to comply with the DC Court decision gutting its authority. The proposed process is not transparent and may undermine the rule's effectiveness and integrity. As an alternative, we would encourage some modifications that will align DE with WA and VT by limiting the exception process to HFC blends for the two specific foam uses that are under consideration by the EPA. Please see below in green for the suggested edits:

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 modifies the regulation to exclude hydrofluorocarbon blends with a global-warming-potential of 750 or less in ~~certain end-uses~~ rigid polyurethane low-pressure two-component spray foam and polystyrene extruded boardstock and billet. 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 ~~or other persuasive rationale for modifying the Regulation~~.

Please let me know if you'd like to discuss this further, happy to schedule a quick call.
Thank you for all your work on this and I hope you had a lovely Thanksgiving.

My best,
Christina

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Tuesday, December 3, 2019 5:05 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

Please find attached the DRAFT Proposal that Delaware will be presenting in the upcoming Public Workshops.
I have highlighted in red the **main** edits of interest that were modified following our last review committee meeting. They address additional stakeholders' comments, internal/USCA discussions, and initial legal review.

The clean version will shortly be posted on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/
Please let me know if you have any questions,
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC)
Sent: Thursday, November 14, 2019 10:56 AM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: Delaware HFCs Public Workshops

Delaware HFCs Public Workshops

Dear HFCs Stakeholder,

Please find below, details about the upcoming public workshops that Delaware's Department of Natural Resources and Environmental Control will be hosting regarding the upcoming proposal to regulate hydrofluorocarbons (HFCs) in the State of Delaware.

Meeting Description

Following the Governor's directive and House Concurrent Resolution 60, the Department of Natural Resources and Environmental Control has been directed to propose a regulation for the use and manufacturing of HFCs by March 30, 2020. The Department as held review committee meetings in September and October 2019, and will continue the regulatory development process by hosting a set of three public workshops where the Department will present the background information for this action, the regulatory language proposal, and request further public comments.

Contact Information

Ajo Rabemiarisoa

(302) 739-9402

ajo.rabemiarisoa@delaware.gov

Regulations and Plans Under Development Website (text link: https://dnrec.alpha.delaware.gov/air/permitting/under-development/)

December 9, 2019 from 6:00 pm to 8:00 pm

Location

Division of Waste and Hazardous Substances

Lukens Drive Office

391 Lukens Drive, New Caste, DE, 19720

Conference Room B

December 9, 2019 from 6:00 pm to 8:00 pm

Public Calendar **Link**

December 10, 2019 from 6:00 pm to 8:00 pm

Location

Delaware Technical Community College Owens Campus

Carter Partnership Center

21179 College Drive, Georgetown, DE 19947

Rooms 540 G & H

Public Calendar Link

December 18, 2019 from 10:00 am to 12:00 pm

Location

Division of Air Quality

State Street Commons, Suite 6A

100 W, Water Street, Dover, DE 19904

Training Room

Public Calendar Link

Virtual Meeting Information

The December 18 workshop will have a remote access option, please find the information for the Skype meeting attached.

Please, don't hesitate to reach out if you have any further questions.

Best,

Ajo Rabemiarisoa,

Environmental Engineer

DNREC - Division of Air Quality

302.324.2083- phone

ajo.rabemiarisoa@delaware.gov

Rabemiarisoa, Ajo (DNREC)

From: Theodoridi, Christina <Ctheodoridi@nrdc.org>
Sent: Wednesday, December 04, 2019 12:28 PM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Wisniewski, Christian (DNREC); Gray, Valerie A. (DNREC); Olson, Jessica; Pulleyn, Schuyler E
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Ajo,

Thank you for sharing the draft proposal.

I would like to raise a concern regarding the addition of section 6.1.2. The section as it is currently drafted will effectively create a backdoor for HFC substitutes that have not been through EPA's evaluation process and/or are no longer prohibited after EPA re-issues regulations to comply with the DC Court decision gutting its authority. The proposed process is not transparent and may undermine the rule's effectiveness and integrity. As an alternative, we would encourage some modifications that will align DE with WA and VT by limiting the exception process to HFC blends for the two specific foam uses that are under consideration by the EPA. Please see below in green for the suggested edits:

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 modifies the regulation to exclude hydrofluorocarbon blends with a global-warming-potential of 750 or less in ~~certain end-uses~~ rigid polyurethane low-pressure two-component spray foam and polystyrene extruded boardstock and billet. 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 ~~or other persuasive rationale for modifying the Regulation~~.

Please let me know if you'd like to discuss this further, happy to schedule a quick call.
Thank you for all your work on this and I hope you had a lovely Thanksgiving.

My best,
Christina

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Tuesday, December 3, 2019 5:05 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

Please find attached the DRAFT Proposal that Delaware will be presenting in the upcoming Public Workshops.
I have highlighted in red the **main** edits of interest that were modified following our last review committee meeting.
They address additional stakeholders' comments, internal/USCA discussions, and initial legal review.

The clean version will shortly be posted on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/
Please let me know if you have any questions,
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC)
Sent: Thursday, November 14, 2019 10:56 AM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: Delaware HFCs Public Workshops

Delaware HFCs Public Workshops

Dear HFCs Stakeholder,

Please find below, details about the upcoming public workshops that Delaware's Department of Natural Resources and Environmental Control will be hosting regarding the upcoming proposal to regulate hydrofluorocarbons (HFCs) in the State of Delaware.

Meeting Description

Following the Governor's directive and House Concurrent Resolution 60, the Department of Natural Resources and Environmental Control has been directed to propose a regulation for the use and manufacturing of HFCs by March 30, 2020. The Department as held review committee meetings in September and October 2019, and will continue the regulatory development process by hosting a set of three public workshops where the Department will present the background information for this action, the regulatory language proposal, and request further public comments.

Contact Information

Ajo Rabemiarisoa

(302) 739-9402

ajo.rabemiarisoa@delaware.gov

Regulations and Plans Under Development Website (text link: https://dnrec.alpha.delaware.gov/air/permitting/under-development/)

December 9, 2019 from 6:00 pm to 8:00 pm

Location

Division of Waste and Hazardous Substances

Lukens Drive Office

391 Lukens Drive, New Caste, DE, 19720

Conference Room B

December 9, 2019 from 6:00 pm to 8:00 pm

Public Calendar **Link**

December 10, 2019 from 6:00 pm to 8:00 pm

Location

Delaware Technical Community College Owens Campus

Carter Partnership Center

21179 College Drive, Georgetown, DE 19947

Rooms 540 G & H

Public Calendar Link

December 18, 2019 from 10:00 am to 12:00 pm

Location

Division of Air Quality

State Street Commons, Suite 6A

100 W, Water Street, Dover, DE 19904

Training Room

Public Calendar Link

Virtual Meeting Information

The December 18 workshop will have a remote access option, please find the information for the Skype meeting attached.

Please, don't hesitate to reach out if you have any further questions.

Best,

Ajo Rabemiarisoa,

Environmental Engineer

DNREC - Division of Air Quality

302.324.2083- phone

ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

DRAFT – For deliberative purposes - for discussion only

TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

PROPOSED REGULATION

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

3/1/2020

1.0 Purpose

1.1 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, installs, uses, or manufactures in the State of Delaware, any substance used in end-uses listed in Section 6.0 or any product or equipment using any such substance.

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

2.3 *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. Chapter 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 or bun stock" 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 and/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.

"**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 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.

"**Global Warming Potential (GWP)**" means a measure of the radiative efficiency (heat-absorbing ability) of a particular gas relative to that of carbon dioxide (CO2) 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 CO2. 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 - compact", or "household refrigerators and freezers - built-in."

"**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).

"**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: 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.

"**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 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.

"**Manufacturer**" means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means 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 that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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 insulation.

"**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.

"**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 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(s), condenser(s), and receiver(s) 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 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.

"**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 pounds per square inch (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 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 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.

"**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).

"**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.

3/1/2020

4.0 Standards (Requirements)

4.1 Prohibitions

4.1.1 No person may sell, install, use or manufacture in the State of Delaware, any listed substance or any product or equipment using a listed substance for use in 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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray 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 this regulation, any person who manufactures and/or sells 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 hydrofluorocarbon."

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

4.2.1.4.2 Alternative 2

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

3/1/2020

5.0 [RESERVED]

3/1/2020

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 and 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
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,	January 1, 2022

	R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03.	
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
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
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
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A.	January 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
Stand-Alone Units (Retrofit)	R-404A, R-507A.	January 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

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
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
Vending Machines (Retrofit)	R-404A, R-507A.	January 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
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021

Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
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
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
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

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 modifies the regulation to exclude hydrofluorocarbon blends in certain end-uses. 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 or other persuasive rationale for modifying the Regulation.

3/1/2020

7.0 End-use and prohibited substances exemptions

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

Table 2. End-use and Prohibited 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.

Rabemiarisoa, Ajo (DNREC)

From: Olson, Jessica <Jessica.Olson2@Honeywell.com>
Sent: Saturday, December 07, 2019 6:57 AM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Chiang, Amy; Schuyler E Pulleyn; Christina Theodoridi
Subject: DE Draft HFC Regulation
Attachments: DE Reg 1151 - working development DRAFT HON Comments.DOCX

Hi, Ajo,

After careful review of the draft language, it appears that a key phrase that is necessary to align the regulation with other state programs, and fully implement the SNAP prohibitions, is missing in a couple of places. (MD is missing the same language and we are also reaching out to them.)

The California, Washington and Vermont laws prohibit not only the sale or installation of a listed substance, but the sale or installation of *a product or equipment using* a listed substance, within the state after the relevant end-use transition date.

Attached and below is a redline showing two small edits that would bring the DE regulation into line with the existing state programs, and the NJ legislation that has been introduced:

2. Applicability

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

4.1 Prohibitions

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

The prohibition on sales or installation of products or equipment using listed substances appears in each of California's Senate Bill (SB) 1013, Washington's SB 1112 and Vermont Senate Bill (S.) 30. *See* Cal. Health and Safety Code §. 39734(e); Washington Laws of 2019, ch. 284, § 3(1); 10 V.S.A. § 586(b)(1).

If the DE regulation fails to incorporate such language, it will potentially be applying its prohibition on HFCs to a smaller subset of activities and excluding instances in which products or equipment are delivered to, or installed in, the state containing prohibited substances. New Jersey S. 3919, as most recently amended, likewise applies to the same scope as CA, WA and VT; so adopting regulations with a narrower scope would be inconsistent with the legislation introduced in New Jersey as well.

Please feel free to give me a call anytime to discuss if it would be helpful.

Best,
Jes

202-341-8911

Rabemiarisoa, Ajo (DNREC)

From: Justin Koscher <jkoscher@pima.org>
Sent: Monday, December 09, 2019 12:06 PM
To: Rabemiarisoa, Ajo (DNREC)
Subject: RE: Delaware HFCs Public Workshops - Draft Language
Attachments: PIMA Comments Delaware HFC Model Reg FINAL 10.7.19.pdf; DE Reg 1151 - working development DRAFT_V4 (5) + PIMA.docx

Dear Ajo,

Thank you for the updates and PIMA looks forward to participating in the December 18th public meeting via webinar.

As we communicated in our October 7th letter (attached), the polyisocyanurate industry remains opposed to the proposed disclosure statement requirement because our industry as a class does not manufacture with HFCs. Based on the Purpose statement in the regulations and the definition of "Manufacturer" in your proposal, we believe the intent is to regulate current uses of HFCs. However, later sections of the proposal are written broadly and would apply to any product listed in Table 1.

To address this concern, we would propose that Section 4.2 be limited to those persons who use HFCs on or after the effective of this regulation. I have included draft language in the attached Word document. I believe this exemption would encourage manufacturers to transition more quickly and would also be consistent with the narrow intent of the regulation, which is to reduce the use of the prohibited high-GWP substances (not merely regulate any end use listed in the SNAP program).

Notwithstanding our comments above, any labeling requirement should permit a label to be placed on the product itself or factory packaging. Many products (including polyiso) are sold in factory packaging (to the final buyer). These packaging labels provide key information to the buyer. I don't read the current language to be overly restrictive in terms of the placement of the HFC label (as long as it's provided to the buyer), but I wanted to flag this issue for you. Also, as a potential alternative for disclosure, many product manufacturers provide or make available Safety Data Sheets to buyers. A product SDS (within Section 3) may disclose the blowing agent used in the product. This disclosure would accomplish the same goal without requiring an additional label.

Please let me know if you have questions regarding any of the comments above.

Best,
Justin

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Friday, December 06, 2019 6:20 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

We have received early comments on our Draft language, after which we have slightly revised our Draft Version to be presented in our upcoming public workshops.
Please find attached the revised version, with edits highlighted (illustrated below):

SubSection 4.2.1.1

"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."

Section 6.1.2:

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 modifies the regulation to exclude 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 ~~in certain end uses~~. 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 ~~or other persuasive rationale for modifying the Regulation~~.

The Draft Language is now available on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/

Thank you and let me know if you have any additional questions,
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Tuesday, December 03, 2019 5:05 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

Please find attached the DRAFT Proposal that Delaware will be presenting in the upcoming Public Workshops.
I have highlighted in red the **main** edits of interest that were modified following our last review committee meeting.
They address additional stakeholders' comments, internal/USCA discussions, and initial legal review.

The clean version will shortly be posted on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/

Please let me know if you have any questions,
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC)
Sent: Thursday, November 14, 2019 10:56 AM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: Delaware HFCs Public Workshops

Delaware HFCs Public Workshops

Dear HFCs Stakeholder,

Please find below, details about the upcoming public workshops that Delaware's Department of Natural Resources and Environmental Control will be hosting regarding the upcoming proposal to regulate hydrofluorocarbons (HFCs) in the State of Delaware.

Meeting Description

Following the Governor's directive and House Concurrent Resolution 60, the Department of Natural Resources and Environmental Control has been directed to propose a regulation for the use and manufacturing of HFCs by March 30, 2020. The Department as held review committee meetings in September and October 2019, and will continue the regulatory development process by hosting a set of three public workshops where the Department will present the background information for this action, the regulatory language proposal, and request further public comments.

Contact Information

Ajo Rabemiarisoa

(302) 739-9402

ajo.rabemiarisoa@delaware.gov

Regulations and Plans Under Development Website (text link: https://dnrec.alpha.delaware.gov/air/permitting/under-development/)

December 9, 2019 from 6:00 pm to 8:00 pm

Location

Division of Waste and Hazardous Substances

Lukens Drive Office

391 Lukens Drive, New Caste, DE, 19720

Conference Room B

December 9, 2019 from 6:00 pm to 8:00 pm

Public Calendar **Link**

December 10, 2019 from 6:00 pm to 8:00 pm

Location

Delaware Technical Community College Owens Campus

Carter Partnership Center

21179 College Drive, Georgetown, DE 19947

Rooms 540 G & H

Public Calendar Link

December 18, 2019 from 10:00 am to 12:00 pm

Location

Division of Air Quality

State Street Commons, Suite 6A

100 W, Water Street, Dover, DE 19904

Training Room

Public Calendar Link

Virtual Meeting Information

The December 18 workshop will have a remote access option, please find the information for the Skype meeting attached.

Please, don't hesitate to reach out if you have any further questions.

Best,

Ajo Rabemiarisoa,

Environmental Engineer

DNREC - Division of Air Quality

302.324.2083- phone

ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

DRAFT – For deliberative purposes - for discussion only

TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

PROPOSED REGULATION

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

3/1/2020

1.0 Purpose

1.1 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, installs, uses, or manufactures in the State of Delaware, any substance used in end-uses listed in Section 6.0.

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

2.3 *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. Chapter 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 or bun stock" 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 and/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.

"**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 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.

"**Global Warming Potential (GWP)**" means a measure of the radiative efficiency (heat-absorbing ability) of a particular gas relative to that of carbon dioxide (CO2) 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 CO2. 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 - compact", or "household refrigerators and freezers - built-in."

"**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).

"**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: 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.

"**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 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.

"**Manufacturer**" means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means 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 that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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 insulation.

"**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.

"**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 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(s), condenser(s), and receiver(s) 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 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.

"**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 pounds per square inch (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 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 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.

"**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).

"**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.

3/1/2020

4.0 Standards (Requirements)

4.1 Prohibitions

4.1.1 No person may sell, install, use or manufacture in the State of Delaware, any listed substance for use in 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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray 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 this regulation, any person who manufactures and/or sells 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 As of the effective date of this regulation, any person who does not manufacture and/or sell products or equipment containing any substance listed as prohibited in Section 6.0 shall not be required to provide a written disclosure to the buyer.

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

4.2.1.4.2 Alternative 2

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

5.0 [RESERVED]

3/1/2020

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 and 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
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,	January 1, 2022

	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.	
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
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
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
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A.	January 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
Stand-Alone Units (Retrofit)	R-404A, R-507A.	January 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	January 1, 2021

	formulation), RS-44 (2003 formulation), SP34E, THR-03.	
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
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
Vending Machines (Retrofit)	R-404A, R-507A.	January 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
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021

Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
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
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
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

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 modifies the regulation to exclude 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 ~~in certain end-uses~~. 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 ~~or other persuasive rationale for modifying the Regulation~~.

3/1/2020

7.0 End-use and prohibited substances exemptions

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

Table 2. End-use and Prohibited 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.

117 Somerset Road

Wilmington, DE 19803

December 9, 2019

Ajo Rabemiarisoa

DNREC Division of Air Quality

100 W. Water Street, Suite 6A

Dover, DE 19904

RE: PROPOSED REGULATION OF HFCs

Dear Ms. Rabemiarisoa:

As a resident of Delaware and chemist, I wish to wholeheartedly support the HFC regulations proposed by DNREC and which we are discussing at this hearing.

I speak from knowledge of this subject from my career with DuPont Fluoroproducts and from my continuing consulting in this area.

The proposed phase out of HFC refrigerants is an important step for Delaware's air quality. HFCs are known to have very high global warming potential, higher than CO2. For this reason, HFCs are a health threat and are already being phased out in Europe. The US unfortunately has no similar phase out at the Federal level at this time, so it is vital that we address the threat at the state level.

Note also that safe alternatives to HFCs are already readily available. Thus refrigerants users, both industrial and consumer, will be able to change to an acceptable alternative. The safe alternatives are called Hydrofluoro olefins, or "HFOs", and have been available since 2013.

I commend DNREC and our legislators for taking this step to protecting Delaware's air quality and urge prompt adoption of the proposed regulations.

Regards,

Nancy Hannigan

Nancy Hannigan

Rabemiarisoa, Ajo (DNREC)

From: Hansbro, Jeffrey M <jeffrey.hansbro@dupont.com>
Sent: Thursday, December 12, 2019 11:11 AM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Massaro, Lisa M
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Importance: High

Hello Ajo,

It was good to connect on Monday eve at the Public Workshop. I would like to clarify the use of the word "exclude" below in section 6.1.2.1.

Is it meant to read that the 750 blend would be "excluded" from the prohibited list?
OR
Should it read "include" to read that the blend would be included in the regulation as being allowed?

We understand that this is meant to be example language, but we would want to avoid any confusion over terminology. I read it as exclude and Lisa reads it as include 😊

Many Thanks,
Jeff

Jeff Hansbro
Advocacy & Strategic Partnerships Director
Performance Building Solutions

DUPONT

Jeffrey.Hansbro@dupont.com
+1-312-497-2968
building.dupont.com

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Friday, December 6, 2019 6:20 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Subject: [EXTERNAL] RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

We have received early comments on our Draft language, after which we have slightly revised our Draft Version to be presented in our upcoming public workshops.
Please find attached the revised version, with edits highlighted (illustrated below):

SubSection 4.2.1.1

"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."

Section 6.1.2:

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 modifies the regulation to exclude 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 ~~in certain end uses~~. 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 ~~or other persuasive rationale for modifying the Regulation~~.

The Draft Language is now available on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/

Thank you and let me know if you have any additional questions,
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Sent: Tuesday, December 03, 2019 5:05 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: RE: Delaware HFCs Public Workshops - Draft Language

Dear Participant to the Delaware HFCs Review Committee Meetings,

Please find attached the DRAFT Proposal that Delaware will be presenting in the upcoming Public Workshops.
I have highlighted in red the **main** edits of interest that were modified following our last review committee meeting.
They address additional stakeholders' comments, internal/USCA discussions, and initial legal review.

The clean version will shortly be posted on our regulatory development website:
https://dnrec.alpha.delaware.gov/air/permitting/under-development/
Please let me know if you have any questions,

Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
302.324.2083- phone
ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

From: Rabemiarisoa, Ajo (DNREC)
Sent: Thursday, November 14, 2019 10:56 AM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: Wisniewski, Christian (DNREC) <Christian.Wisniewski@delaware.gov>; Gray, Valerie A. (DNREC) <Valerie.Gray@delaware.gov>
Subject: Delaware HFCs Public Workshops

Delaware HFCs Public Workshops

Dear HFCs Stakeholder,

Please find below, details about the upcoming public workshops that Delaware's Department of Natural Resources and Environmental Control will be hosting regarding the upcoming proposal to regulate hydrofluorocarbons (HFCs) in the State of Delaware.

Meeting Description

Following the Governor's directive and House Concurrent Resolution 60, the Department of Natural Resources and Environmental Control has been directed to propose a regulation for the use and manufacturing of HFCs by March 30, 2020. The Department as held review committee meetings in September and October 2019, and will continue the regulatory development process by hosting a set of three public workshops where the Department will present the background information for this action, the regulatory language proposal, and request further public comments.

Contact Information

Ajo Rabemiarisoa

(302) 739-9402

ajo.rabemiarisoa@delaware.gov

Regulations and Plans Under Development Website (text link: https://dnrec.alpha.delaware.gov/air/permitting/under-development/)

December 9, 2019 from 6:00 pm to 8:00 pm

Location

Division of Waste and Hazardous Substances

Lukens Drive Office

391 Lukens Drive, New Caste, DE, 19720

Conference Room B

December 9, 2019 from 6:00 pm to 8:00 pm

Public Calendar **Link**

December 10, 2019 from 6:00 pm to 8:00 pm

Location

Delaware Technical Community College Owens Campus

Carter Partnership Center

21179 College Drive, Georgetown, DE 19947

Rooms 540 G & H

Public Calendar Link

December 18, 2019 from 10:00 am to 12:00 pm

Location

Division of Air Quality

State Street Commons, Suite 6A

100 W, Water Street, Dover, DE 19904

Training Room

Public Calendar Link

Virtual Meeting Information

The December 18 workshop will have a remote access option, please find the information for the Skype meeting attached.

Please, don’t hesitate to reach out if you have any further questions.

Best,

Ajo Rabemiarisoa,

Environmental Engineer

DNREC - Division of Air Quality

302.324.2083- phone

ajo.rabemiarisoa@delaware.gov

Blue Skies Delaware; Clean Air for Life

Rabemiarisoa, Ajo (DNREC)

From: Washington, Kevin <kwashington@itw.com>
Sent: Wednesday, December 18, 2019 11:33 AM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Wisniewski, Christian (DNREC); Gray, Valerie A. (DNREC)
Subject: stationary commercial refrigeration

FYI re: the Bill Sickles question about stationary commercial refrigeration. He's talking about stationary commercial refrigeration equipment that sits on casters / wheels. Being designed to roll into a vehicle, where that vehicle will transport food to another physical location, does NOT qualify as mobile refrigeration in our industry. This equipment is factory charged and hermetically sealed just as all other stationary equipment – from ITW or other commercial refrigeration equipment makers. Thus, it should also not be considered mobile refrigeration along as the same lines as refrigerated trucks.

His was a slight of hand question to attempt to exempt from DELAWARE's regulation commercial refrigeration equipment that IS covered by the EPA which, if allowed, would create unfair and undue competitive advantage to stationary products just because the refrigerator "box" sits atop wheels.

Thank you,

Kevin Washington

Illinois Tool Works Inc. (ITW)
Government Affairs
1725 I Street, NW | Suite 300 | Washington, DC 20006
O: 202.261.3550 | M: 202.304.6264 | E: kwashington@itw.com

Rabemiarisoa, Ajo (DNREC)

From: Sickles, Bill <Bill.Sickles@metro.com>
Sent: Thursday, December 19, 2019 3:16 PM
To: Wisniewski, Christian (DNREC)
Cc: Rabemiarisoa, Ajo (DNREC)
Subject: Delaware Public Workshop on Proposal to Regulate Hydrofluorocarbons

Hello, Christian. You may recall we spoke earlier this month regarding this subject and our mobile refrigeration units. You were kind enough to send me an invite to yesterday's Skype meeting.

InterMetro manufactures and sells a heavy-duty mobile refrigerator intended for use with central kitchens serving remote locations such as:

1. a school district with a centralized kitchen and satellite schools without cooking facilities; or
2. for caterers who prepare food and then must transport it to off-site events.

The refrigerator has either 6" or 8" casters for easy loading/unloading with trucks and loading docks. These units are powered for a few hours to bring them down to refrigeration temperature, loaded with cold food and are then unpowered while the food is transported to another location. The refrigerator remains unpowered until needed again at the central kitchen or caterers facility.

Regarding the Skype meeting held Wednesday, December 18, I asked for a better definition of "stationary" used in the Refrigeration Equipment definition. By the definition below, I am assuming our type of equipment will NOT be regulated by the proposed Delaware Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses. Could you verify this? A definition for "stationary" might help avoid confusion.

> "**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.

For reference, the California Air Resources Board has answered our same inquiry by stating "mobile refrigerators are not regulated by the California Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration."

Thanks for your consideration in this matter.

Willard Sickles, PE | Manager, Product Safety & Compliance Engineering
InterMetro Industries Corporation | 651 N Washington St | Wilkes-Barre, PA 18705
570 706 3121 Phone
570 825 4899 Fax
Bill.Sickles@Metro.com
www.Metro.com

An Ali Group Company

December 23, 2019

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Re: Delaware Draft Regulation 1151 – Requirements for the Phase-Down of Hydrofluorocarbons

Dear Ms. Rabemiarisoa,

Thank you for the opportunity to participate in the stakeholder meeting on December 18 as well as for the cooperative way in which DNREC is involving the industry that will be regulated and other stakeholders. Please allow this letter to supplement Arkema's earlier comments dated October 31, and to address the comments made during the 12/18 meeting.

Arkema supports the goals of the proposed rulemaking. Our comments relate only to the schedule of implementation in several of the affected markets where the newly-regulated community needs more time to comply for technical, commercial or safety reasons.

As was mentioned during the stakeholder meeting, insulating foams are highly engineered products designed to save energy. In addition to the blowing agents, currently based on HFCs, they contain many other components that provide safety, stability and efficiency. A change in the blowing agent will require product reformulation, customer trials and production changes. The equipment and plant design, capital appropriation, equipment order, and implementation can easily take 12-18 months after a new formulation is selected. As any regulation proposed by DNREC is not likely to become final until the second half of 2020, many in the industry will only have a few months to implement the necessary changes, which is not enough. We therefore request that the end-use date for the following four foam applications be extended to 1/1/2022:

- Extruded Polystyrene (XPS) Board Stock and Billet
- Rigid Polyurethane (PU) Spray – High Pressure 2-Component Foam
- Rigid Polyurethane (PU) Spray – Low Pressure 2-Component Foam
- Rigid Polyurethane (PU) Spray –One Component Foam

It was also mentioned during the meeting that 3 other states (CA, WA, VT) have adopted the original SNAP dates as you are proposing. These states, however, adopted their end-use dates through legislative enactments adopted in 2018 or 2019, thereby providing the regulated industry the 12 to 18 months lead time necessary to implement the new requirements. We are only asking that Delaware provide industry and the marketplace with the same compliance window. This is not a substitute availability issue, but an implementation time issue. The original SNAP end-use dates adopted by the U.S. EPA in 2015 and 2016 provided the regulated community 4 to 5 years for implementation, a much longer period than we are requesting.

Allowing this minor change will also allow local businesses the opportunity to compete across the state lines where such restrictions are not being considered. It will not cause anyone who may implement the changes earlier, to "roll back".

In the cooling applications, we also respectfully draw your attention to the fact that many of the new refrigerant gases are hazardous – they may be mildly or even highly flammable, and in some cases toxic. While mildly flammable gases can be used safely (and already are in many parts of the world), their use requires proper training of technicians, contractors and other personnel that may be involved in operation, maintenance or installation of equipment containing these gases. Several organizations, most notably the Air Conditioning Contractors Association (ACCA) and Air Conditioning, Heating and Refrigeration Institute (AHRI) are developing training programs to address this issue. Arkema is a sponsor of this effort, and we recommend that the Department discuss with these organizations the timing needed to address their workforce training issues. Arkema is happy to facilitate these discussions if needed.

Finally, switching to new refrigerants has a cost. For businesses that operate on very thin margins, this may mean foregoing improvements and continuing to run old equipment thereby increasing refrigerant leakage and using more energy – factors that would defeat the very purpose of the proposed regulations. We therefore urge you to talk to the affected stakeholders in businesses such as groceries, to understand the impact on them.

Thank you again for seeking input from stakeholders. Please feel free to reach out to me at (610) 205-7077 for any additional information you may need.

Sincerely,

Allen Karpman
Director, Government Activities, Fluorochemicals
Arkema, Inc.
900 First Avenue, King of Prussia, PA 19406
allen.karpman@arkema.com

12/20/2019
Ajo,

I've had some further discussions with folks in my organization, and we feel the following definition of new would actually be better than what I had previously proposed in my email:

> "New" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, expanded after the effective date of this regulation, to handle an expanded cooling load by the addition of components in which the **nominal compressor** capacity of the system is increased~~**, including refrigerant lines, evaporators, compressors, and condensers**~~, or 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.

The reasoning for the use of the term "nominal compressor capacity" versus "heat removal capacity" (from my previous definition) is that various efficiency upgrades to a system could actually result in an increase to system heat removal capacity. Obviously we would not want to dissuade owner's from performing upgrades on their systems to more energy efficient equipment by forcing them to perform a retrofit on top of the component upgrade.

Thanks,
Frank Vadino Jr., PE
(Licensed in CT & DE)
Cold Technology
Office: (856) 827-0144
Mobile: (609) 685-1847

From: Rabemiarisoa, Ajo (DNREC) [mailto:Ajo.Rabemiarisoa@delaware.gov]
Sent: Tuesday, December 10, 2019 9:41 AM
To: Vadino, Francis J. <Vadino.Francis@coldtech.com>
Cc: juliemirowenger@gmail.com; Frank J. Vadino <Vadino.Frank@coldtech.com>
Subject: RE: Comments/Clarifications Related to Proposed Regulation 1151 'Prohibitions on Use of Certain Hydroflurocarbons in Specific End-Uses'

Good morning Frank,

Thank you for reaching out and providing the comments below. We will submit these comments as part of comments received for the public workshops (as we will discuss in the workshop, the public comments period will be open until January 17th, 2020). As you can understand, since we have started our round of public workshops, no modifications to the draft language can be made at this moment, but we will review all comments, address your different questions, and request clarifications if/when needed, after the public workshops.

Please note that we are requesting further comments on the definition of "new" in our public workshops. This definition was edited from our previous version, to match California's current definition of "new" equipment, which they have been successful at implementing with their stakeholders. We are,

however submitting your comments for further review after the workshops, and will welcome additional comments from stakeholders on this definition.

Please don't hesitate to contact me if you have any further questions in the meantime.
Best,

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
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Blue Skies Delaware; Clean Air for Life

From: Vadino, Francis J. <Vadino.Francis@coldtech.com>
Sent: Monday, December 09, 2019 12:02 PM
To: Rabemiarisoa, Ajo (DNREC) <Ajo.Rabemiarisoa@delaware.gov>
Cc: juliemirowenger@gmail.com; Frank J. Vadino <Vadino.Frank@coldtech.com>
Subject: Comments/Clarifications Related to Proposed Regulation 1151 'Prohibitions on Use of Certain Hydroflurocarbons in Specific End-Uses'

Ajo,

After reviewing the Draft V3 of proposed regulation 1151 'Prohibitions on Use of Certain Hydroflurocarbons in Specific End-Uses', we have the following comments/clarifications we feel need to be made in the proposed regulation:

1. Maintenance – I know that we discussed this in the previous review meetings, and it is my continued understanding that your intent is not to affect our ability to maintain/preserve the operability of existing systems, but I feel that this regulation is not very explicit to that regard. Perhaps we can amend 4.1.2 to state:

   > "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. **Nor does this regulation prevent the use of a prohibited substance in the maintenance/repair of an existing product/equipment which contains or was designed to contain a prohibited substance and was installed prior the effective date of prohibition.** Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition."

   I am open to different wording or inclusion of wording in another section. I just feel that the regulation needs to explicitly state that we can continue to used prohibited/banned substances in the maintenance of existing systems using/designed to use those substances. We do not want to create a situation where existing systems would effectively be made obsolete by this regulation because the regulation bans us from performing the required maintenance/repairs to keep these system operating.

2. Disclosure – It was my understanding that the intent of this regulation was to place the burden of disclosure on the manufacturer of the equipment. The wording of Section 4.2.1 states "As of the effective date of this regulation, any person who manufactures and/or sells 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." The term "manufactures and/or sells" would lead me to believe that as a contractor/distributor who purchases equipment from a manufacturer/distribution channel and then re-sells and in many cases installs the equipment in the state of Delaware, we would be required to make the disclosure statement to the end consumer. Is this the intent? If not, can we possibly clarify the wording in some way to make it clearer that the burden of disclosure is solely that of the manufacturer, not the re-seller.

3. The definition of "New" products/equipment – Can you please clarify the intent of this regulation with regards to how new equipment is handed? The definition of "New" in the proposal is:

> "New" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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.

My concern is that based on this wording, performing even relatively minor remodels/changes to a supermarket system would result in the need to perform a retrofit and I want to confirm that that is truly the prohibitions intent. For example, if I have an existing refrigeration system installed in a supermarket, it may be only loaded to 70% of the systems total capacity. If I were to add a single new case (evaporator) to that system, I would be forced to perform a retrofit because I added new cooling load, a new evaporator, and a new refrigerant line, even though I did not change the existing capacity of the existing system. Another, more complex example, would be that if I were to say remove 4 existing cases and replace them with 5 new, more efficient cases (e.g. changing from open dairy cases to dairy doors) I would be forced to perform a retrofit even though the total cooling load actually was reduced all because I added a new case (evaporator) to the system. I think that the wording of this definition could even be construed as to mean that if a case were relocated (causing the refrigeration line to the case to be extended to the cases new location) then a retrofit would need be performed. If the intent of this regulation is not to force smaller projects (where the capital cost would be <<50% of the cost of replacing the system) into having to perform a retrofit then I would suggest revising the definition of "New" to something more along the lines of the following:

> "New" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, expanded after the effective date of this regulation, to handle an expanded cooling load by the addition of components in which the **heat removal** capacity of the system is increased~~**, including refrigerant lines,**~~

~~evaporators, compressors, and condensers~~, or 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.

Please let me know if you have any questions related to these comments/clarifications or if you would like to discuss anything further.

Thanks,
Frank Vadino Jr., PE
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January 17, 2020

Ajo Rabemiarisoa
Environmental Engineer
Department of Natural Resources and Environmental Control
Division of Air Quality

Submitted via email to: ajo.rabemiarisoa@delaware.gov

RE: Proposed Regulation - 1151 Requirements for the Phase-Out of Hydrofluorocarbons – Version 4

Ms. Rabemiarisoa,

The American Chemistry Council's Center for the Polyurethanes Industry[1] (CPI) appreciates the opportunity to comment on the Delaware Department of Natural Resources and Environmental Control's (DNREC) draft of the proposed 1151 Requirements for the Phase-Out of Hydrofluorocarbons (HFCs) – version 4 (draft regulations).

CPI supports consistency across all states that are regulating the use of HFCs in the foam sector. We would like to acknowledge DNREC for its leadership. DNREC has consistently strived to align the draft regulations with other states regulating HFCs. CPI encourages DNREC to use our comments to refine the draft regulations and the model rule developed by the U.S. Climate Alliance. CPI believes improvements to the model rule will help promote consistency throughout the United States.

CPI's comments on the draft regulations are mainly technical and are intended to promote clarity to regulated entities. We respectfully submit the following comments:

1. **Definitions:**

CPI appreciates the changes DNREC made to section 3.0 based upon our previous comments. The separate definitions of "foam" and "foam blowing agent" provide more clarity and are aligned with industry's use of the terms.

CPI has identified several inconsistencies in the definitions for polyurethane end uses. The definitions of the polyurethane end uses reference "polymers," "polyurethane polymers," "polyurethane," "urethane," and the raw materials used to form polyurethane polymers. CPI suggests developing a definition for "polyurethane," and then referencing the term polyurethane in the definition of the end uses. This builds a consistent approach to the end use definitions. Accordingly, CPI submits the following technical changes to section 3.0:

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

[1] The Center for the Polyurethanes Industry's (CPI) mission is to promote the growth of the North American polyurethanes industry through effective advocacy, delivery of compelling benefits messages demonstrating how polyurethanes deliver sustainable outcomes, and creation of robust safety education and product stewardship programs.

- "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.

- "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.

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

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

2. Disclosure Statement:

CPI supports the proposed disclosure requirements in section 4.2.1.3.2. Focusing the disclosure on compliance status will provide users and regulators the necessary information to ensure low global warming potential (GWP) products are used and installed in Delaware. While CPI does not have significant opposition to proposed disclosure alternative 1 in section 4.2.1.3.1, CPI is concerned that it is not entirely clear that regulated entities can choose either option. Additionally, alterative 1 focuses on disclosure of specific chemistries, not compliance status. Disclosure of a specific chemistry likely does not provide the clarity needed for users and enforcement officials to know the product they would like to

use is compliant – especially if an exemption is granted for certain foam end uses to continue to use HFC blowing agents. In this example, users and enforcement officials will likely assume the product is not compliant if it discloses use of an HFC. Alternative 2 covers all scenarios because it focuses on compliance status. Additionally, CPI urges DNREC to clarify that the disclosure can be on the product or on the product packaging. CPI anticipates that manufacturers of polyurethane systems will include the disclosure on the drum or on the box for low pressure SPF systems.

CPI recommends the following changes:

> 4.2.1.3 ~~For f~~Foam products shall include the following disclosure on the product or product packaging~~, the disclosure or label should include~~:
>
> ~~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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.~~
>
> ~~4.2.1.3.2 Alternative 2~~
>
> ~~4.2.1.3.2.1~~ "Where sold, compliant with State HFC regulations."

3. Sell-Through Period

CPI appreciates DNREC's recognition that spray polyurethane foam systems manufactured or blended prior to the date of restriction can be used or applied in Delaware after the effective date of the restriction. As discussed during the stakeholder workshop on December 9, 2019, there are multiple types of polyurethane foams – not just spray foam – that are used as "systems." For context, the polyurethane industry refers to the liquid components of the "A-side" and "B-side" together as a system.

For additionally clarity, CPI recommendations the following changes to section 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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including ~~spray~~ polyurethane foam systems not yet applied) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition.

If you have any questions or need additional information, please contact me at Stephen_wieroniey@americanchemistry.com, or (202) 249-6617.

Sincerely,

Stephen Wieroniey, Director

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January 17, 2020

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Re: AHRI Comments to Delaware Draft Regulation 1151 – Regulations for the Use and Manufacturing of Hydrofluorocarbons

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Dear Ms. Rabemiarisoa,

This letter is submitted in response to the Delaware Department of Natural Resources and Environmental Control, Division of Air Quality Proposed Regulation 1151 – Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses.

AHRI represents over 300 air-conditioning, heating, and refrigeration equipment manufacturers. In North America, the annual output of the HVACR and water heating industry is worth more than $44 billion. In the United States, the industry supports 1.3 million jobs and $256 billion in economic activity annually.

AHRI has been working for more than a decade to support regulations to reduce the consumption and production of HFCs. Our members strongly supported the agreement to amend the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down HFC production and consumption as a proven, predictable, and practical approach. We demonstrated that support in our work with state regulators and environmental non-governmental organizations (E-NGOs). Our industry has worked closely with local governments both foreign and domestic to prepare and successfully execute the safe and orderly transition to low-GWP refrigerants. We look forward to collaborating with the Delaware Department of Natural Resources and Environmental Control; we hope that our comments will be helpful and encourage you to contact us with any questions, concerns or requests.

We are currently working together with our E-NGO partners and with the Climate Alliance states that have announced an intent to regulate HFCs in the United States. It is our goal to help states adopt and implement laws and regulations consistently, with standard requirements, across jurisdictions. We recognize that regulations must meet greenhouse gas reduction objectives while still providing critical societal benefits—preserving food and medicine and, in some cases, providing life-saving cooling (e.g. hospitals). As a matter of general policy, AHRI would prefer a federal initiative to address low-GWP refrigerants to avoid a patchwork of regulations. We recognize Delaware's efforts to address this important issue with consistency and appreciate the opportunity to comment on the regulation.

Our comments focus on recommendations designed to harmonize aspects of the regulation with existing regulations, to align with the intent of the original EPA SNAP rules, and to achieve a workable, enforceable framework to provide certainty and consistency for industry by addressing the following topics:

1. Definition and use of "Manufacture"
2. Allowing the use of products intended for service or maintenance
3. Reclaim
4. Definition of "New"
5. Disclosures
6. Codes and Standards
7. Technician Training
8. Formal Exemption Process

Definition and use of "Manufacture"

The intention of United States Environmental Protection Agency (EPA) Significant New Alternatives Program (SNAP) Rules 20 and 21 is to regulate the use of certain HFCs in specific end uses. It is AHRI's understanding that DNREC's proposed regulation is intended to adopt these requirements for equipment being installed in the state of Delaware. As written, the draft language may ban warehousing and the transport of non-Delaware products through the state. For example, DNREC's requirements would prevent products from being imported into the port of Wilmington or transported on I-95 through the state of Delaware. Moreover, the regulatory language could prevent research on HFCs at universities or at companies located in the state of Delaware that manufacture small amounts of refrigerant. AHRI recommends the following edits to clarify the intent of the regulation:

In section 1.0, Purpose, delete the term "manufacture":

> 1.1 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."

In Section 3.0, Definitions:

Banning the formulation or packaging of controlled substances inequitably impacts small and medium distributors, packagers, and companies who may not have sufficient capital to move their regional distribution centers to another state. It harms business owners who prefer operating in Delaware and are willingly compliant with HFC regulations in every state banning their use. AHRI strongly recommends that DNREC modify the definition of "USE" as follows.

"**Use**" means any utilization of any substance, including but not limited to utilization in a ~~manufacturing process or~~ product installed 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~~.

Allowance of the manufacture of products intended for service or maintenance

AHRI supports the clarification that products or equipment manufactured prior to the effective date may be used after the specified prohibition date. However, we are concerned that the language is not clear that products or substances that are intended for servicing, maintenance, or repairs may still be manufactured and used after the effective date, so long as they do not fall under the definition of "new equipment". Clarification is needed in the regulation to allow for continued servicing of existing equipment as it is not DNREC's intention to force the replacement of equipment before the end of its useful life.

AHRI suggests adding the following statement:

In section 4.0, Standards (Requirements):

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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition. For clarity, products, equipment, or substances may be manufactured, sold, imported, exported, distributed, installed, and used after the specified date of prohibition to service existing equipment. Finally, products may be manufactured, sold, imported, exported, and distributed for use outside the state.

Reclaim

To support the important goals of emissions reductions, AHRI would like to reiterate its suggestion that DNREC encourage the use of reclaimed refrigerants through its HFC regulations. Creating demand for reclaimed refrigerant encourages the proper collection of refrigerant during maintenance and for end-of-life of equipment. We strongly recommend that DNREC take affirmative steps to promote reclamation by requiring the use of reclaimed refrigerant in state procurement processes. A strategy that promotes the recovery, reclamation and re-use of refrigerants directly achieves DNREC's goal of reducing HFC emissions by eliminating, or at least significantly reducing, the need to service existing systems with newly manufactured product.

AHRI is concerned that the definition of "Use" in the draft regulation may prohibit the proper collection of refrigerant during maintenance and at the end of life for the equipment

In section 3.0, Definitions:

AHRI strongly recommends that DNREC modify the definition of "USE" as follows.

> "**Use**" means any utilization of any substance, including but not limited to utilization in a ~~manufacturing process or~~ product installed 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~~.

Definition of "New"

AHRI appreciates DNREC's work to upgrade the definition of "new" based on stakeholder feedback. We believe that this addresses potential ambiguities.

Disclosures

At the September 24th meeting, many stakeholders expressed concern with the proposed requirement for a written disclosure statement. AHRI recommends including a provision in the regulation that expressly permits the use of internet disclosures in lieu of physical labels. Industry experience demonstrates that physical labels are not an effective means of communicating compliance with consumers or regulators because HVAC equipment is rarely on display. Rather, it is stored in a warehouse until after it is contracted for, sold, and installed. Internet disclosures are acceptable and a more cost effective and practical means of communicating important compliance, installation, and consumer information about installed equipment such as commercial refrigeration. Indeed, under Federal Trade Commission rules governing the familiar yellow Energy Guide labels, online information by manufacturers satisfies the disclosure obligation. Equipment requiring refrigerant disclosures could be made the same way.

The AHRI Directory offers an option as an existing accessible database of readily available information on a vast array of regulated equipment. As discussed at the September 27, 2019, and January 15, 2020 meeting, the AHRI Directory may be of use to regulators as states promulgate HFC rulemakings, particularly as a means of easily accessing information on millions of models on the market. Currently, the centralized database provides contractors, regulators, and consumers with product information, including model-specific certificates and EnergyGuide labels.

We hope that the September 27, 2019 and January 13, 2020 webinars were helpful to introduce DNREC staff to the AHRI Directory and showcase the capabilities that could be adapted to help manufactures comply with internet disclosures. AHRI encourages DNREC staff to explicitly allow the use of an online or written disclosure to ease the burden on manufacturers and to allow for a more effective means of communicating compliance with consumers and regulators.

Codes and Standards

AHRI strongly recommends DNREC work with the county Divisions of Codes and Standards to adopt rules permitting the use of substitutes not prohibited by this regulation. For manufacturers to adopt some low-GWP alternative refrigerants, the safety standards and building codes must be updated for the use mildly flammable refrigerants. This is a concern with the current proposal and it is important to note that some products' installation may be inhibited by existing code limitations. For example, there are no refrigerants listed pursuant to the EPA's Significant New Alternatives Program as acceptable alternatives for chillers designed to use high pressure "410A"-like refrigerants.

The ASHRAE-listed alternatives are mildly flammable and not yet approved for certain equipment types by EPA. The model building code to enable the use of mildly flammable refrigerants is not yet available. Unless ASHRAE Standard 15 and UL60335-2-40 are adopted into Delaware building codes, chillers manufacturers could not comply with 2024 transition date.

AHRI suggests that Delaware convene a meeting of interested stakeholders including local fire service, state fire marshal, building code officials and others for an educational session regarding the safe transition to low GWP refrigerants.

Technician Training

Training and servicing requirements for technicians will be important considerations for future regulations. AHRI suggests that DNREC consider including a requirement that technicians have refresher training on some frequency as the transition to lower global warming potential refrigerants will require new uses of different American Society of Heating and Refrigeration Engineers (ASHRAE) safety classification of refrigerants than have been historically used.

Formal Exemption Process

AHRI would like to reiterate its request for the inclusion of a process to allow for potentially necessary exemptions that may come to light in the future. A good model for this framework is Canada's "essential purpose" permit option included in the Ozone-Depleting Substances and Halocarbons Alternatives Regulations (ODSHAR). Low-GWP alternatives and the products that use them are complex. Manufacturers are innovating and developing new products and technologies for a variety of vital applications like commercial refrigeration. As new uses and technologies come onto the market and as innovation continues, there may be a need to exempt certain products for certain applications. In the ODSHAR, the exemption permit clause is intended to allow a person to import, manufacture, use, or sell a substance or product designed to contain a substance if "it will be used for an essential purpose" and a permit is specifically issued. Environment and Climate Change Canada (ECCC) defines "essential purpose" as a purpose requiring the use of a substance or a product containing or designed to contain a

substance, when that use is necessary for the health and safety or the good functioning of society, encompassing its cultural and intellectual aspects, and when there are no technically or economically feasible alternatives to that use that are acceptable from the standpoint of the environment and of health.

The ODSHAR essential purpose exemption and definition clause can be reviewed at Part 5 – s.66 (1) and (2). We encourage Delaware to work with ECCC directly to learn more about the "essential purpose" permitting avenue.[1]

Thank you for providing stakeholders the opportunity to give feedback during and following the stakeholder meetings along with sharing these comments with the Climate Alliance to ensure state-to-state harmonization of rules. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

Jennifer Kane
Regulatory Engineer
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[1] ECCC's Halocarbons Management Team at ec.gestionhalocarbures-halocarbonsmanagement.ec@canada.ca.

Chemours
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January 17, 2020

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Re: Chemours Comments to Delaware Draft Regulation 1151 – Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses

Dear Ms. Rabemiarisoa,

This letter is submitted in response to the Delaware Department of Natural Resources and Environmental Control, Division of Air Quality Proposed Regulation 1151 – Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses.

Chemours is a global leader in the production and sales of safe and energy efficient refrigeration, air conditioning, foam insulation, fire suppression, propellants and waste heat recovery fluids. With both Headquarters and Research and Development facilities located in Delaware, Chemours' appreciates the opportunity to participate in the rule development process, and respectfully submits these comments for your consideration.

Chemours supports efforts undertaken in Delaware and other states, including California, Washington, Vermont, New Jersey, Maryland, New York, and Connecticut to adopt prohibition on certain HFCs based on the 2015 and 2016 US EPA Significant New Alternatives Policy (SNAP) Rules 20 and 21. Consistency in scope and applicability among different states is critical to a harmonized regulatory framework.

As written, language in draft regulation 1151 may be interpreted to prohibit the sale or installation of a listed substance rather than sale or installation of a product or equipment using a listed substance within the state, according to Section 6 of the proposed regulation. Such an interpretation could prevent research and development activities within the State of Delaware. It is imperative that the regulation be clear that research and development activities are exempt from any prohibitions established by this regulation.

We believe the following edits to Sections 2.0 and 3.0 of the draft language will ensure consistency of Delaware's regulation with legislation enacted in California, Washington, and Vermont. Specifically, this language would make clear the delineation between use

or manufacture of a listed substance and use or manufacture of a prohibited product or equipment using a listed substance in an end use as prohibited in Section 6.0.

In Section 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 or will use a substance ~~used in~~ for any of the end-uses listed in Section 6.0

In Section 3.0, Definitions:

"Use" means any utilization of any substance, including but not limited to utilization in a ~~manufacturing process or~~ product installed 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.

We are also suggesting edits to section 4.0 that will clarify this regulation does not prohibit the continued use of listed substances for servicing of existing equipment.

In Section 4.0, Standards (Requirements)

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 use in 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; nor does this regulation prohibit the sale or use of prohibited substances to recharge existing refrigeration or air-conditioning equipment that is not new or retrofit. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition

Sincerely,

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January 17, 2020

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Comments to Delaware Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons Working Development Public Meeting, December 18, 2019

Dear Ms. Rabemiarisoa,

The following comments supplement previous comments from Daikin US Corporation (Daikin US) and are also in response to the Delaware Department of Natural Resources and Environmental Control, Division of Air Quality Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons public meeting on December 18, 2019.

Daikin US offers these comments on behalf of the Daikin Industries, Ltd. (DIL) businesses operating in the United States: Goodman Global Group, Inc.; Daikin North America LLC; Daikin Applied Americas Inc.; and Daikin America, Inc. DIL is a world leader in advancing air quality in our work, home and shared spaces and continues to pioneer HVAC technologies that promote higher standards for American industry, environment, and quality of life. DIL and its subsidiaries are focused on reducing greenhouse gas emissions and climate impacts.

On September 26, 2019, Daikin announced its intent to develop ducted and ductless residential, light-commercial, and applied products utilizing R-32 refrigerant for the North American market. Daikin selected R-32 due to the drastically lower GWP profile when compared to the currently commonly used R-410A, its energy efficiency benefits, and the ease to reuse, reclaim, and recycle the refrigerant.

While Daikin US contends that federal regulations are the most desirable way to regulate the phase-down of hydrofluorocarbons, we intend to work with individual states as they look to achieve their emissions reduction goals. Our goal is to assist states and territories to adopt and implement consistent laws and regulations, and to avoid a patchwork of regulations. Meeting state greenhouse gas reduction objectives and meeting the desire for comfort cooling is a fundamental part of crafting these regulations.

Daikin US's comments will focus on suggestions on aligning regulations across states and with the EPA's SNAP 20 and 21 rules to create a harmonized framework of HFC regulations across the country.

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Section 1.0 Purpose

As written, Section 1.0 laying out the Purpose of the regulation may inadvertently ban products from being imported or transported through the state of Delaware or prevent research in the state where companies make small amounts of refrigerant. To avoid this problem, Daikin US agrees with AHRI that this section should be modified to delete the term "manufacture" so it reads:

> 1.1 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."

Definitions

These comments are intended both to support the comments of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), the national trade association for HVAC equipment manufacturers and in addition to the comments from AHRI

For the definition of the word "new," Daikin US believes that the definition, which we submitted in our previous comment, is clearer than the DNREC's most recently proposed version.

Finally, as we advised deleting the term "manufacture" from the Section 1.0, Purpose, we also recommend together with AHRI that the definition of "Use" be modified as follows:

1) "Use" means any utilization of any substance, including but not limited to utilization in a product installed in Delaware, consumption by the end-user in the State of Delaware. For the purposes of this regulation, use excludes residential use.

Formal Exemption Process

Again, here we support the comments of AHRI by requesting a process to allow for potentially necessary exceptions that may come to light in the future. AHRI requests that DNREC consider including a clause within this regulation to account for necessary exceptions similar to Canada's essential purpose permit option in their Ozone-depleting Substances and Halocarbons Alternatives Regulations (ODSHAR). To prepare for the transition to low-GWP alternatives with such complex products as commercial refrigeration equipment, the clause is intended to allow a person to import, manufacture, use, or sell a substance or product designed to contain a substance if it will be used for

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an essential purpose and a permit is specifically issued. Environment and Climate Change Canada (ECCC) defines 'essential purpose' as a purpose requiring the use of a substance or a product containing or designed to contain a substance, when that use is necessary for the health and safety or the good functioning of society, encompassing its cultural and intellectual aspects, and when there are no technically or economically feasible alternatives to that use that are acceptable from the standpoint of the environment and of health.

The ODSHAR essential purpose exemption and definition clause can be reviewed at Part 5 – s.66 (1) and (2). The process is still being finalized by ECCC, but any specific questions can be sent to ECCC's Halocarbons Management Team at ec.gestionhalocarbures-halocarbonsmanagement.ec@canada.ca.

Disclosures

The proposed requirement for a disclosure statement is of serious concern. After reviewing Delaware's most recent revisions to its draft regulation, we believe all the information that the state is requesting is already available on the UL label in the case of air-conditioning equipment. Both for the purposes of this current draft regulation, and for any other future regulations, Daikin US prefers that the state of Delaware accept the UL label as sufficient for disclosure requirements.

However, if Delaware proceeds with its previous draft regulation requiring different disclosures depending on end-use, we continue to support AHRI's suggestion of allowing the use of internet disclosures. Like AHRI, we agree that written disclosures are an unwarranted and unnecessary burden, and that it is impossible to execute given the complexity of sales channels across all the different states. Indeed, under the Federal Trade Commission rules governing yellow Energy Guide labels, online information required of manufacturers satisfies the disclosure obligation.

The AHRI Directory offers an option as an existing accessible database of readily available information. It contains easy-to-access information on millions of models on the market. Currently, the database provides contractors, regulators, and consumers with product information, including model-specific certificates and Energy Guide labels.

Clarity for allowing manufacture of products for intended service or maintenance

In **Section 4.0, Standards,** we agree with AHRI that there is confusion in the language regarding products intended for the servicing, maintenance, or repair for existing equipment. It is not clear that products that are intended for servicing, maintenance, or repairs may still be manufactured and used after the effective date of the regulation, so long as they do not fall under the definition of "new equipment." As it is not DNREC's intent to force the replacement of equipment before the end of its useful life, we agree that the below addition in red will allow for the continued servicing of existing equipment.

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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. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition. For clarity, products or equipment, or substances may be manufactured, sold, imported, exported, distributed installed, and used after the specified date of prohibition may be used to service existing equipment. Finally, products may be manufactured, sold, imported, exported, and distributed for use outside the state.

Codes and Standards

Daikin US agrees with AHRI that in order for Delaware and other states to meet their HFC emissions reductions goals, the model building code must enable the use of mildly flammable refrigerants. In order for manufacturers to adopt some low-GWP alternative refrigerants, the safety standards and building codes must enable the use of mildly flammable refrigerants. Currently, EPA's Significant New Alternatives Program lists no refrigerants as acceptable alternatives for chillers designed to use high pressure "410A"–like refrigerants.

We also encourage Delaware to work with the appropriate county offices that approve and update the building codes. Without the adoption of codes that allow for the use of low GWP refrigerants, the state will not achieve its goals. Specifically, we request the regulation direct the Division of Codes and Standards to adopt ASHRAE 15-2019 and UL 60335-2-40 3rd edition, or equivalent (e.g. model codes that include those standards).

Reclaim

Daikin US recommends Delaware consider adding provisions to promote refrigerant reclamation in order to promote best practices. As the only HVACR equipment manufacturer that is also a producer of refrigerants, we suggest that an essential part of Delaware's strategy to reduce HFC emissions should be to address refrigerant management. Any ban that does not exempt reclaimed product will leave stranded all existing equipment that relies on a banned refrigerant. We believe that Delaware's strategy should not only exempt reclaimed refrigerant but should start with a heavy emphasis on the value of refrigerant reclamation as a means to reduce emissions and we strongly recommend that DNREC not only exempt it from future sales bans, but also take affirmative steps to promote reclamation. A strategy that promotes the

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recovery, reclamation and re-use of refrigerants directly achieves DNREC's goal of reducing HFC emissions by eliminating, or at least reducing, the need to service existing systems with newly manufactured product.

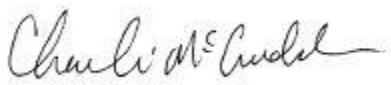
Daikin recommends the state suggest and encourage that reclamation should also be done in conjunction with mandatory leak repair per existing US EPA requirements.

Technician Training

Training and servicing requirements for technicians will be important considerations for future regulations. The industry intends to develop a standardized training program for technicians, contractors, wholesalers, and trainers. As with past refrigerants transitions, training will be important so that installation, repairs, and maintenance will result in optimized performance and minimized refrigerant losses. Addressing the safety concerns with A2L refrigerants is paramount. On this topic Daikin is willing to work with the Department of Resources and Natural Control and other stakeholders to provide guidance on training materials and curriculum.

Thank you for the opportunity to provide these comments.

Sincerely,



Charlie McCrudden
Director, Government Affairs

January 17, 2020

Ajo Rabemiarisoa
Environmental Engineer
Department of Natural Recourses and Environmental Control
Division of Air Quality

Submitted via email to: Ajo.Rabemiarisoa@delaware.gov

Re: NRDC Comments to DNREC on Proposed HFC Regulation

Dear Ms. Rabemiarisoa,

The Natural Resources Defense Council (NRDC) commends the Department of Natural Resources and Environmental Control (DNREC) for taking action to reduce emissions of the extremely potent greenhouse gases known as hydrofluorocarbons (HFCs). We appreciate the opportunity to provide input to DNREC regarding the proposed HFC regulation, as it was published on December 6, 2019.

a. NRDC supports DNREC's proposed rule and encourages consistency with other states

The proposed rule recreates HFC prohibitions set forth by the U.S. Environmental Protection Agency's Significant New Alternatives Policy (SNAP) Program Rules 20 & 21. NRDC supports the proposed timeline for placing requirements on high-GWP HFCs in aerosol propellants, foams, refrigeration equipment, and chillers. Many of these requirements were already in force as federal requirements or would have been by the end of next year; DNREC rightly proposes to make those provisions effective in 2021.

b. NRDC recommends modifying the scope of prohibitions

The EPA SNAP rules as well as similar prohibitions already in place in California, Washington, Vermont and New Jersey apply to products and equipment containing high-GWP HFCs – not to the use of the substances themselves. We encourage DNREC to modify the proposed language to align with the scope of the federal rules and those of other states. To do so, we strongly suggest that sections 2.1 and 4.1.1 be amended as follows:

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

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

c. NRDC conditionally supports the proposed procedure to request an exemption for two niche foam uses, following an EPA SNAP determination

NRDC conditionally supports the amendment to section 6.1.2.1 which allows a person to submit a request to exclude from the prohibition an HFC-blend with a GWP of 750 or less for use in rigid

polyurethane low-pressure two-component spray foam and polystyrene extruded boardstock and billet. NRDC's support is contingent on the GWP and end-use criteria being met. To ensure a transparent and equitable process, stakeholders should have an opportunity to provide input and feedback on the request prior to a determination by DNREC.

d. NRDC opposes essential purpose permits

In previous comments to DNREC, certain industry proposals have requested an exemption process for essential purposes, imitating the mechanism currently in place under Canada's federal Ozone-depleting Substances and Halocarbons Alternatives Regulations (ODSHAR). Unlike the US, Canada is following an HFC supply phase-down during which nationwide consumption of HFCs in the country is gradually reduced. In addition to the phase-down, Canada has sector-specific bans on the use of high-GWP HFCs in specific products and equipment, similar to those promulgated under the US EPA SNAP rules and those currently under consideration in Delaware.

Such an exemption process is not necessary in Delaware and, if established, will undermine the purpose of the proposed Delaware regulation. The US is not implementing a nationwide supply phase-down and the US EPA SNAP rules only apply to a limited array of end-use categories. In addition, the **EPA has already carved-out exemptions for essential purposes, following rigorous analyses and industry feedback. These exempted uses are already included in Delaware's proposed HFC regulation.**

Permits for essential purposes do not exist in any of the other states regulating HFC-containing products and equipment or in the EPA SNAP rules. There is no need for a new process to allow exemptions, nor should the responsibility fall on DNREC to evaluate whether a specific use should qualify as essential.

Exemptions for essential purposes should be backed by thorough analyses and data gathering and should be granted following an extensive stakeholder engagement process, like the one currently underway in Delaware. The process must be inclusive and transparent and allow for proper feedback from industry and sector experts. The exemption process through DNREC-issued permits proposed by some industry stakeholders endangers transparency and undermines the validity of any potential, subsequent decision.

e. NRDC supports refrigerant reclamation in general, but warns that there is no need to exempt reclaimed refrigerant from the proposed rule

NRDC recognizes the importance of refrigerant reclamation and its role in promoting proper refrigerant management at the end of the equipment's useful life. Incentives that bolster the market for reclaimed refrigerant can partially prevent HFC emissions by promoting the collection, treatment and re-use of these potent greenhouse gases.

Under the proposed regulation, reclaimed refrigerant remains an available option for servicing existing equipment. The regulation does not place any restrictions on the use of reclaimed HFCs in equipment manufactured prior to the effective dates of this regulation.

Past industry proposals requested exempting products or equipment containing reclaimed substances from the prohibitions. NRDC strongly opposes exempting new equipment that contain any of the prohibited substances past the effective date of the prohibitions, even if the substance has been

reclaimed. Such an exemption would allow the introduction to the market of systems operating with high-GWP refrigerants that will continue to leak these harmful pollutants for decades to come.

f. NRDC encourages coordination with the relevant department to update the state's building codes

We encourage DNREC to consider by what process state building codes may be updated to allow for the use of low-GWP alternatives with mild flammability. The provisions in the proposed rule largely do not require building code changes, but a couple regulated sectors would benefit from such updates. More importantly, updated building codes will allow HFC alternatives to enter the market in new air conditioning systems, the single largest HFC emitting sector in the U.S.

Thank you for the opportunity to provide these comments and we look forward to working with you during the rulemaking process.

Sincerely,

Christina Theodoridi

Technical Analyst
Climate & Clean Energy Program
NATURAL RESOURCES DEFENSE COUNCIL
ctheodoridi@nrdc.org

Rabemiarisoa, Ajo (DNREC)

From: Nicholas Georges <ngeorges@thehcpa.org>
Sent: Friday, January 17, 2020 8:45 AM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Wisniewski, Christian (DNREC)
Subject: HCPA Comments DE Reg 1151
Attachments: HCPA Comments DE Reg 1151.pdf

Dear Ms. Rabemiarisoa,

The Household & Commercial Products Association (HCPA) appreciates the opportunity to provide the attached comments on your draft proposed regulation to phase down the use of certain hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. Specifically, our comments focused on aerosol propellants.

If you have any questions regarding our comments or would like to discuss them further, please do not hesitate to contact me.

Sincerely,

Nicholas Georges
Senior Director, Scientific & International Affairs
Household & Commercial Products Association

HOUSEHOLD & COMMERCIAL PRODUCTS ASSOCIATION

Innovative Products For **Home. Work. Life.**

January 17, 2020 *via* electronic transmission

Ajo Rabemiarisoa
Environmental Engineer
Delaware Department of Natural Resources and Environmental Control
Division of Air Quality
715 Grantham Lane
New Castle, DE 19720
ajo.rabemiarisoa@delaware.gov

Subject: Draft Proposed Regulation 1151 Requirements for the Phase Down of Hydrofluorocarbons; DE Reg 1151

Dear Ms. Rabemiarisoa,

The Household & Commercial Products Association[1] (HCPA) appreciates the opportunity to offer comments on Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Air Quality's (DAQ's) draft proposed regulation to phase down the use of certain hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses by adopting specific United States Significant New Alternatives Policy (SNAP) Program prohibitions. HCPA supports the draft proposal to adopt the 2015[2] and 2016[3] United States Environmental Protection Agency (EPA) prohibitions on the use of HFCs as substitutes for ozone-depleting substances to ensure consistency with other state activity to limit the use of certain HFCs; however, HCPA recommends modifications to the disclosure requirements of aerosol products.

HCPA represents a wide range of products, from household cleaners and air fresheners to commercial disinfectant and pest control whose use of aerosol technology makes the aerosol industry an integral part of the household and commercial products industry. HCPA has represented the U.S. aerosol products industry since 1950 through its Aerosol Products Division, representing the interest of companies that manufacture, formulate, supply and market a wide variety of products packaged in an aerosol form.

[1]The Household & Commercial Products Association (HCPA) is the premier trade association representing companies that manufacture and sell $180 billion annually of products used for cleaning, protecting, maintaining, and disinfecting homes and commercial environments. HCPA member companies employ 200,000 people in the U.S. whose work helps consumers and workers to create cleaner, healthier and more productive lives.

[2] Appendix U of Subpart G of 40 CFR Part 82

[3] Appendix V of Subpart G of 40 CFR Part 82

I. HCPA Supports Delaware's Actions to Restrict the Use of High Global Warming Potential HFCs in a Manner that Is Consistent with Other States

HCPA is in support of DAQ's goal to restrict the use of high global warming potential (GWP) HFCs through limiting their use in a manner that is consistent with similar action taken by other states to restrict the use of HFCs. California, Vermont and Washington have all passed legislation regulation to achieve the same goal of limiting the use of certain high GWP HFCs by utilizing Appendix U and Appendix V of Subpart G of 40 CFR Part 82 (Jan. 3, 2017). Further, Maryland Department of the Environment is also currently drafting regulatory language to restrict the use of HFCs in a similar manner.

DAQ's approach is consistent with other state actions, which is critical so that industry has regulatory certainty for compliance and future planning, investment, sales and research and development decisions. Aerosol manufacturers utilize a variety of propellants which pressurize the aerosol system and influence how the product is expelled from the container.

Traditionally, the use of high-GWP HFCs by the aerosol industry was limited to a small number of products categories where their usage was necessary. Because of the original timeline with EPA's SNAP Rules, the U.S. aerosol industry has already moved away from using high-GWP HFCs in aerosol products except for the critical uses that were exempted. Thus, Delaware and other states are ensuring through this consistent action that aerosol products in which the usage of high-GWP is not critical do not reenter the market.

II. HCPA Recommends the Following Modifications to the Draft Proposed Regulation

HCPA would like to request a few modifications to DAQ on the draft proposed regulation.

a) HCPA Recommends Modifying the Definition of an Aerosol Propellant

HCPA supports DAQ's draft proposal because it is consistent with other state activity to limit the use of high GWP HFCs; however, it is also important to align with already existing Delaware regulations.

HCPA recommends DAQ refer to the definition of a Propellant in the state's regulation "Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products." Here, the definition of an Aerosol Propellant is as follows:

> Propellant means a liquefied 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.[4]

[4] 7 DE Admin. Code 1141 § 2.2

By referring to an already existing Delaware regulation, DAQ would maintain consistency in the definition of an aerosol propellant.

b) **HCPA Recommends Modifying the Recordkeeping Requirements**

Aerosol product manufacturers currently keep manufacturing records for a minimum of three years. Companies follow this standard due to Delaware's "Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products"[5] as well as other states that have similar consumer product regulations. HCPA recommends that DAQ require that any person who manufacturers aerosol products for sale or entry into commerce in Delaware maintain the required records for three years rather than five years to ensure consistency with these regulations. If DAQ is not able to cite its own regulation, then HCPA recommends that DAQ copies the recording keeping requirements found in DE Admin. Code 1141 § 2.8.2.1 exactly without deviation.

c) **HCPA Recommends the Removal of a Disclosure Statement on Labels for Aerosol Products.**

HCPA does not believe that a written disclosure on the label of an aerosol products to indicate that the aerosol product is compliant with states that have restricted the use of high GWP substances is practical. While the scope of products that use high GWP HFCs is limited to only the exempted uses under the SNAP Regulations, it is critical to know that some of these products cannot list the propellant or a statement about the propellant due to federal regulation. Prescription drugs, such as metered dose inhalers (MDIs), and EPA FIFRA-registered products cannot highlight a single inert ingredient as it would make it appear to be as important as the active ingredient in the product. Because different aerosol products have different labeling requirements as they are regulated by different federal agencies, HCPA respectfully requests that a disclosure requirement on the label be removed.

Rather than rely on a disclosure on a label, HCPA recommends that DAQ obtain the safety data sheet (SDS) for any particular product that is of concern to verify the propellant and ensure compliance. Under the U.S. Occupation Safety and Health Administration's (OSHA) hazard communication standard,[6] the safety data sheet will contain the information of each hazardous chemical in Section 3 (Composition/information on ingredients). Because these high GWP HFCs are responsible for the pressure of any aerosol product which utilizes them, they must be listed in this section, as must any other aerosol propellant. While consumer products, prescription drugs and EPA registered products are outside of the scope of OSHA, manufacturers and marketers of virtually all consumer products have appropriate corresponding SDS. Manufacturers and marketers have generated SDS for virtually all aerosol products because they are produced and stored in workplace settings and many retailers require them as part of

[5] 7 DE Admin. Code 1141 § 2.8.2.1
[6] 29 CFR 1910.1200(g)

doing business. HCPA believes that obtaining an SDS for an aerosol product to verify compliance is the best and most efficient option for enforcement as the aerosol propellant, no matter the GWP, must be listed.

d) **HCPA Recommended Regulatory Language for Section 4.2.1.4 (Disclosure Requirement)**

To ensure consistency with comments in the previous section on the record keeping and disclosure statement on a label for high GWP HFCs, HCPA would like to recommend the following language for DAQ to utilize to replace the current proposed language in Section 4.2.1.4:

> For aerosol propellant products, the aerosol propellant must be listed in a Safety Data Sheet (SDS) that complies with the requirements of the 29 CFR 1910.1200. The person who manufactures and sells or introduces into commerce in the State must also ensure that each aerosol propellant product complies with the product-dating requirements in 7 DE Admin. Code 1141 § 2.5.1.

Maryland Department of the Environment is using similar wording for aerosol products in their regulatory language and having consistent requirements for the record keeping and disclosure statement is essential.

III. Conclusion

HCPA appreciates the opportunity to offer these comments on DAQ's draft proposed regulation. By developing consistent regulations, states can achieve a reduction in HFC emissions without imposing impediments to interstate commerce.

If you have any questions about our support or suggestions presented in these comments, please do not hesitate to contact me directly at (202) 833-7304 or ngeorges@thehcpa.org.

Sincerely,

Nicholas Georges

Nicholas Georges
Senior Director, Scientific and International Affairs
Household & Commercial Products Association

cc: Christian Wisniewski, Environmental Engineer, Division of Air Quality, Department of Natural Resources and Environmental Control

Rabemiarisoa, Ajo (DNREC)

From: Olson, Jessica <Jessica.Olson2@Honeywell.com>
Sent: Friday, January 17, 2020 10:41 AM
To: Rabemiarisoa, Ajo (DNREC)
Cc: Chiang, Amy
Subject: Supplemental Comments on DE Draft HFC Regulation
Attachments: DE Reg 1151 - working development DRAFT_V3.DOCX; ATT00001.htm

Hi, Ajo,

Happy New Year!

Thank you for the opportunity to provide additional comments on Delaware's draft regulation to prohibit certain uses of hydrofluorocarbons (HFCs) in specific end-uses. Honeywell strongly supports this draft regulation and applauds Delaware's action. With this action, Delaware will join California, Washington state, Vermont, Connecticut, Massachusetts, New Jersey, New York and other states that have or will soon adopt similar requirements to maintain the transition to safer, available alternatives to high-global-warming-potential (GWP) HFCs.

We request a few edits to ensure the regulation is consistent with EPA's regulations under the Significant New Alternatives Policy Program and other state HFC regulations. The edits are necessary to align the regulation with other state programs, and fully implement the SNAP prohibitions. Attached is a redline showing small edits that would bring the DE regulation into line with the existing state programs, and the NJ legislation that has been introduced.

The legislation enacted in California, Washington and Vermont prohibits not the sale or installation of a listed substance, but the sale or installation of *a product or equipment using* a listed substance, within the state after the relevant end-use transition date. The prohibition on sales or installation of products or equipment using listed substances appears in each of California's Senate Bill (SB) 1013, Washington's SB 1112 and Vermont Senate Bill (S.) 30. *See* Cal. Health and Safety Code §. 39734(e); Washington Laws of 2019, ch. 284, § 3(1); 10 V.S.A. § 586(b)(1) (see excerpts below). New Jersey S. 3919, as most recently amended, likewise applies to the same scope as CA, WA and VT.

If the DE regulation fails to incorporate such language, it will potentially be applying its prohibition on HFCs to a smaller subset of activities and excluding instances in which products or equipment are delivered to, or installed in, the state containing prohibited substances. In other words, in those state programs, the prohibition applies only to products or equipment containing prohibited substances, not to the substances themselves; so adopting regulations with a narrower scope would be inconsistent with legislation adopted or proposed in other states.

We also suggest language to clarify that the sale of prohibited substitutes for servicing (i.e., for recharging existing equipment that was installed prior to the effective date of the prohibited use of that substitute) is allowable. Again, this is consistent with the EPA program and other state programs.

Lastly, we understand that CPI is submitting some clarifying edits to the definitions pertaining to foam end-uses and we support those changes.

We appreciate the opportunity to provide input and applaud Delaware's leadership on this issue.

Best,

Jes

Prohibition Language in Other State Programs

California

(e) ***A person shall not offer any equipment or product for sale, lease, rent, or otherwise cause any equipment or product to enter into commerce in California if that equipment or product uses or will use a substitute in a manner inconsistent with*** *any of the following:*

(1) Any prohibitions in subdivision (c) [adopting prohibitions of EPA SNAP Rules 20 and 21].

(2) Any prohibitions, use conditions, or use limits in subdivision (d) or a state regulation [referring to relevant rules promulgated in the future].

(3) Any other applicable laws, including, but not limited to, the California Building Standards Code (Title 24 of the California Code of Regulations).

Cal. Health and Safety Code §. 39734(e) (emphasis supplied).

Washington

(1) ***A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Washington if that equipment or product consists of, uses, or will use a substitute, as set forth in appendix U and V, Subpart G of 40 C.F.R. Part 82,*** *as those read on January 3, 2017, for the applications or end uses restricted by appendix U or V of the federal regulation, as those read on January 3, 2017, consistent with the deadlines established in subsection (2) of this section. Except where existing equipment is retrofit, nothing in this subsection requires a person that acquired a restricted product or equipment prior to the effective date of the restrictions in subsection (2) of this section to cease use of that product or equipment. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in subsection (2) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.*

Washington Laws of 2019, ch. 284, § 3(1) (emphasis supplied)

Vermont

(b)(1) ***A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Vermont if that equipment or product consists of, uses, or will use a substitute, as set forth in Appendix U or V, Subpart G of 40 C.F.R. Part 82****, as those read on January 3, 2017, for the applications or end uses restricted by Appendix U or V, as those read on January 3, 2017, and consistent with the dates established in subdivision (b)(4) of this section. Except where existing equipment is retrofit, nothing in this subsection requires a person that acquired a restricted product or equipment prior to an effective date of the restrictions in subdivision (b)(4) of this section to cease use of that product or equipment. Products or equipment manufactured prior to an applicable effective date of the restrictions in subdivision (b)(4) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.*

10 V.S.A. § 586(b)(1) (emphasis supplied)

DRAFT – For deliberative purposes - for discussion only

TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

PROPOSED REGULATION

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

3/1/2020

1.0 Purpose

1.1 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 or will use a substance ~~used in~~for any of the end-uses listed in Section 6.0.

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

2.3 *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. Chapter 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 or bun stock" 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 and/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.

"**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 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.

"**Global Warming Potential (GWP)**" means a measure of the radiative efficiency (heat-absorbing ability) of a particular gas relative to that of carbon dioxide (CO2) 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 CO2. 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 - compact", or "household refrigerators and freezers - built-in."

"**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).

"**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: 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.

"**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 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.

"**Manufacturer**" means any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means 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 that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components after the effective date of this regulation, 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 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 insulation.

"**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.

"**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 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(s), condenser(s), and receiver(s) 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 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.

"**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 pounds per square inch (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 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 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.

"**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).

"**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.

3/1/2020

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 ~~use in~~ 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; nor does this regulation prohibit the sale or use of prohibited substances to recharge existing refrigeration or air-conditioning equipment that is not new or retrofit. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray 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 this regulation, any person who manufactures and/or sells 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 hydrofluorocarbon."

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

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:

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 hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

4.2.1.4.2 Alternative 2

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

3/1/2020

5.0 [RESERVED]

3/1/2020

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 and 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
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,	January 1, 2022

	R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03.	
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
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
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
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A.	January 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
Stand-Alone Units (Retrofit)	R-404A, R-507A.	January 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

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
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
Vending Machines (Retrofit)	R-404A, R-507A.	January 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
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021

Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6.	January 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
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
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
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

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 modifies the regulation to exclude hydrofluorocarbon blends in certain end-uses. 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 or other persuasive rationale for modifying the Regulation.

3/1/2020

7.0 End-use and prohibited substances exemptions

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

Table 2. End-use and Prohibited 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.

PIMA
POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

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Submitted Electronically

January 17, 2020

Delaware Natural Resources and Environmental Control
Division of Air Quality
State Street Commons
100 W. State Street, Suite 6A
Dover, DE 19904

Email sent to: Ajo.Rabemiarisoa@delaware.gov

Re: Public Comments on Draft Regulation: "1151 Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses" (December 2019 Version)

Dear Ms. Rabemiarisoa,

The Polyisocyanurate Insulation Manufacturers Association[1] ("PIMA") appreciates the opportunity to comment on the Delaware Natural Resources and Environmental Control's ("DNREC") draft Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses (December 2019) (hereinafter referred to as "draft regulation"). PIMA supports Delaware's efforts to reduce harmful emissions of greenhouse gases through restrictions on hydrofluorocarbons (HFCs) with high global warming potential. As explained below, we encourage DNREC to scope its regulations narrowly to exclude polyisocyanurate insulation products, which as a category do not use the prohibitive HFC substances, from the draft regulation's disclosure statement requirements.

I. Introduction

PIMA represents North American manufacturers of laminated polyisocyanurate insulation board products ("polyiso insulation"). Our members include Atlas Roofing Corporation, Carlisle Construction Materials, Firestone Building Products, GAF, Johns Manville,

[1] More information available at www.polyiso.org.

IKO Industries, Rmax, and Soprema. These manufacturers account for the majority of polyiso insulation produced and sold in North America, including Delaware.

Manufacturers in the North American polyiso industry do not use HFC substances in their product formulations. As detailed in our letter dated October 7, 2019, the polyiso industry has used pentane (or pentane blends) as the blowing agent for more than twenty years.[2] Pentane is a non-ozone depleting, low global warming potential substance.

We are concerned that the draft regulation could be interpreted to apply the Section 4.2 Disclosure Statement requirements to polyiso manufacturers, which would be unnecessary because the industry never used the prohibited substances in the manufacture of its products. Below we provide suggested modifications to the draft regulation that would address these concerns.

II. Regulatory Intent

The intent of the draft regulation is clear – establish prohibitions and requirements for the use and manufacture of HFCs (Section 1.0 Purpose). This statement implies that the State is interested in regulating existing uses of HFCs in order to reduce greenhouse gas emissions.

The limited scope of this regulatory action is further evidenced by the definition for "Manufacturer" – *"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* (emphasis added) (Section 3.0 Definitions). The definition implies again that the State is interested in regulating only existing uses of HFCs in order to meet GHG emissions reduction targets.

However, later sections of the draft regulation are scoped too broadly and could be interpreted as applying to any end-use category listed by name in Table 1 "End-use and Prohibited substances." This result is clearly inconsistent with the State's regulatory intent. Therefore, below we propose several modifications to the regulatory language that would avoid such inconsistencies.

[2] Pentane offers an economical solution for polyiso insulation products and delivers exceptional thermal resistance that contributes to polyiso insulation's high R-value – the primary physical property for thermal insulation products. Polyiso insulation manufacturers have made significant capital investments in modifying existing facilities and constructing new plants that allow for the safe use of pentane technology in the manufacturing process.

III. Proposed Modifications to Draft Regulation

First, we propose modifying **Section 7.0 End-use and prohibited substances exemptions** by adding a subsection to exempt the polyiso insulation end-use from the disclosure requirements. Specifically, we propose the following addition:

> [New] 7.2 The requirements of Section 4.2 Disclosure Statement do not apply to any person who sells, offers for sale, installs, uses, or manufactures Polyisocyanurate Laminated Boardstock products that do not contain the substances listed in Section 6.0.

A similar exemption could also (or alternatively) be added to **Section 4.2 Disclosure Statement**. Specifically, we propose the following addition:

> [New] 4.2.1.3.3 Any person who manufactures or sells Polyisocyanurate Laminated Boardstock products shall not be required to provide a written disclosure to the buyer.

Finally, **Section 2.0 Applicability** could be amended to reflect the limited scope of the proposed regulation. Specifically, we propose the following addition:

> 2.1 This regulation applies to any person who sells, offers for sale, installs, uses, or manufacturers in the State of Delaware, any substance used in end-uses listed in Section 6.0. The requirements of Section 4.2 Disclosure Statement are not intended to apply to any person who sells, offers for sale, installs, uses, or manufactures Polyisocyanurate Laminated Boardstock products that do not use or contain the substances listed in Section 6.0.

The options proposed above would bring Delaware's regulatory approach into alignment with other states. For example, the California Air Resources Board (CARB) agreed with PIMA's argument to exclude polyiso manufacturers when it eliminated a proposed labeling requirement for end-uses that categorically do not use HFC substances. **CARB concluded that labeling was unnecessary for end-uses that "have already transitioned out of using HFCs . . . [where] the risk that these end-uses revert to prohibited HFCs is low."**[3] Additionally, Washington State has limited its emergency rulemaking (HFC reporting) to only those end-uses that currently use HFCs and, based on comments at public meeting, is exploring how to implement its permanent rulemaking with a narrow scope that focuses on existing HFC uses only.

[3] California Air Resources Board, Notice of Public Availability of Modified Text, Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses (*dated June 15, 2018*). Text available at: https://www.arb.ca.gov/regact/2018/casnap/15daynotice.pdf.

Finally, notwithstanding our proposed modifications to exempt polyiso insulation from the Section 4.2 Disclosure Statement requirements, we encourage DNREC to permit the disclosure or label for regulated foam products to appear either on the product or product packaging. Labeling individual products may not be feasible for all manufacturers. Furthermore, allowing for product packaging labels would align the requirements with labeling requirements for the State's building code.

IV. Conclusion

PIMA appreciates the opportunity to comment on DNREC's draft regulation. We would be pleased to explore the viability of the proposed modifications described above with staff. Please contact me at jkoscher@pima.org or (703) 224-2289 should additional information be helpful to your deliberative regulatory process.

Respectfully submitted,

Justin Koscher
President

NATIONAL REFRIGERANTS, INC.
11401 Roosevelt Boulevard, Philadelphia, PA 19154

January 17, 2020

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Re: Comments to Delaware Draft Regulation 1151 – Regulations for the Use and Manufacturing of Hydrofluorocarbons

Dear Ms. Rabemiarisoa,

This letter is submitted in response to the Delaware Department of Natural Resources and Environmental Control, Division of Air Quality Proposed Regulation 1151 – Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses.

National Refrigerants, Inc. (NRI) is an independent worldwide distributor of refrigerants and associated refrigerant management services. NRI is an importer, packager, manufacturer, and EPA and AHRI certified reclaimer of refrigerants. It supplies refrigerant products to over 50,000 customers, including those located in or doing business in Delaware that own and operate or service billions of dollars worth of refrigeration and air conditioning equipment. These customers represent businesses of all sizes, including, but not limited to, one and two truck service technician companies, corner grocery stores, supermarket chains, industrial plants, small commercial businesses, hospitals, government facilities, and schools.

NRI is a member of the Air Conditioning, Heating and Refrigeration Institute (AHRI) and supports the comments submitted by AHRI. NRI is particularly concerned about the language in section 4.1.2. and will focus our comments on it.

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

As currently written, 4.1.2 appears to prohibit the use of a substance for service of equipment installed prior to the dates specified in section 6.0. Section 4.1.2 clearly includes equipment manufactured prior to the applicable effective date of the restrictions in Table 1 of subsection 6.1.1 of the regulation but it does not include the word 'substance' which is defined as "any chemical intended for use in the end-uses listed in Section 6.0." Since substance, by definition, is the refrigerant, its exclusion from the exception in 4.1.2 could be interpreted as not allowing any refrigerant listed in section 6.0 to be used to service the installed equipment. During the stakeholder meetings related to this proposed regulation, DNREC stated that their intent was to allow equipment installed prior to an applicable restriction date to be serviced thereby allowing the equipment owner to fully utilize their equipment investment. Therefore, NRI encourages DNREC to revise section 4.1.2 to clarify this and suggests adoption of the language changes offered by AHRI.

NRI appreciates the opportunity to submit these comments and is available to answer any questions you may have about these comments.

Respectfully submitted,
NATIONAL REFRIGERANTS, INC.

Maureen Beatty
Executive Vice President