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FACT SHEET

Final Rule 21 - Protection of Stratospheric Ozone: Significant New Alternatives Policy Program New and Changed Listings

Significant New Alternatives Policy Program

Under section 612 of the Clean Air Act (CAA), EPA reviews substitutes in a comparative risk framework. EPA lists these substitutes as acceptable, acceptable subject to use conditions, acceptable subject to narrowed use limits, or unacceptable (prohibited) for specific uses. Section 612 provides that EPA must prohibit the use of a substitute where EPA has determined that there are other available or potentially available substitutes that pose less overall risk to human health and the environment. To respond to this mandate, EPA's Significant New Alternatives Policy (SNAP) program does not provide a static list of alternatives but provides a list that evolves, taking into account the development of new alternatives, as well as additional or new information about the environmental and human health effects of substitutes already on the SNAP lists. In the decades since the SNAP program began, EPA has modified the SNAP lists many times, most often by expanding the list of acceptable substitutes, but in some cases by prohibiting the use of substitutes previously listed as acceptable. Today's action does both.

As part of the evaluation of overall risk to human health and the environment, EPA considers many criteria, including the flammability or toxicity of a substitute, as well as environmental risks such as ecosystem impacts, local air quality, or impacts on the global atmosphere. Global warming potential (GWP)—a measure of potential impact on climate—is one SNAP criterion EPA considers in evaluating alternatives. During the past two decades, scientists have come to better understand both climate change and the contributions of greenhouse gases (GHGs) such as hydrofluorocarbons (HFCs) to climate change. Most HFCs have high GWPs so are potent GHGs, meaning that, although they represent a small fraction of the current total volume of GHG emissions, their warming impact is very strong. HFC emissions are projected to increase substantially and at an increasing rate over the next several decades if left unregulated. In the United States, emissions of HFCs are increasing more quickly than those of any other GHGs, and globally they are increasing 10-15% annually.

Final Rule

What?

- Lists as acceptable subject to use conditions, list as unacceptable, and changes the status of several substances
- Exempts propane from the CAA's section 608 venting prohibition
- Applies unacceptable listings for foam blowing agents to closed-cell foam products
- Clarifies status of acceptable fire suppression alternative

Which industrial sectors are included?

- Refrigeration & Air Conditioning
- Fire Suppression & Explosion Protection
- Foam Blowing

Who is affected?

- Chemical producers, some manufacturers, and some end-users of equipment and products using refrigerants, fire suppressants, and foam blowing agents

When?

- Starting January 3, 2017; see table for dates for all affected end-uses

Today's Action

Under this final rule, a number of substances are listed as acceptable, subject to use conditions; several substances are listed as unacceptable; and the listing status for certain substances is modified from acceptable to unacceptable or acceptable, subject to narrowed use limits. Consistent with CAA section 612 as we have historically interpreted it under the SNAP program, EPA is making these listings and modifications based on our evaluation of the substitutes addressed in this action on an end-use basis using the SNAP criteria for evaluation and considering the current suite of other alternatives for the specific end-uses at issue. For particular substances, EPA found significant potential differences in risk with respect to one or more specific criteria, such as flammability, toxicity, GWP, or local air quality concerns, while otherwise posing comparable levels of risk to those of other alternatives in specific end-uses. EPA is also modifying the existing listing decisions for foam blowing agents to apply to closed cell foam products and products containing closed cell foam. EPA is revising its interpretation on the "use" of closed-cell foam so that closed-cell foam products, such as foam insulation boards, and products containing closed-cell foam such as appliances, may not be imported or used in the United States if the foam product contains, or the closed-cell foam was made with, a foam blowing agent that is listed as unacceptable under the SNAP program. EPA is listing propane as acceptable, subject to use conditions, as a refrigerant in new self-contained commercial ice machines, in new water coolers, and in new very low temperature refrigeration equipment. In addition, EPA is exempting propane in these end-uses from the venting prohibition under CAA section 608; the CAA allows EPA to exempt specific refrigerants from the venting prohibition where EPA finds that it does not pose a threat to the environment. EPA is also listing as acceptable, subject to use conditions, HFO-1234yf newly manufactured medium-duty passenger vehicles (MDPVs), heavy-duty (HD) pickup trucks, and complete HD vans. In the fire suppression and explosion protection sector, EPA is listing 2-bromo-3,3,3-trifluoropropene (2-BTP) as acceptable with use restricted to total flooding and streaming use in aircraft. EPA is listing as unacceptable certain hydrocarbon (HC) refrigerants and HC blends for retrofitting existing residential central air conditioning equipment that was designed for non-flammable refrigerants and certain HC refrigerants that may negatively impact air quality. EPA is modifying the listing status for certain alternatives in specific end-uses in the refrigeration and air conditioning and foam blowing sectors, and for methylene chloride in flexible polyurethane in the foam blowing sector. Finally, this final rule clarifies that Powdered Aerosol D (Stat-X®) is listed as acceptable, and that the previously issued use condition, which limited use to unoccupied spaces, no longer applies.

Summary of Final Rule

ACCEPTABLE ALTERNATIVES, WITH USE CONDITIONS

End-Uses	Substitutes	Effective Date
Refrigeration		
Self-contained commercial ice machines (new)	Propane (R-290)	January 3, 2017
Water coolers (new)	Propane (R-290)	January 3, 2017
Very low temperature refrigeration equipment (new)	Propane (R-290)	January 3, 2017
Motor Vehicle Air Conditioning (MVAC)		
MDPVs, HD pickup trucks, and complete HD vans (newly manufactured)	HFO-1234yf	January 3, 2017
Fire Suppression and Explosion Protection		
Total flooding agent for use in engine nacelles and auxiliary power units on aircrafts	2-BTP	January 3, 2017
Streaming agent for use in aircraft	2-BTP	January 3, 2017

UNACCEPTABLE ALTERNATIVES

End-Uses	Substitutes	Effective Date
Air Conditioning (AC)		
Residential and light commercial AC and heat pumps – unitary split AC systems and heat pumps (retrofit)	All ASHRAE Flammability Class 3 Refrigerants ^a	January 3, 2017
Residential and light commercial AC and heat pumps (new)	Propylene (R-1270), R-443A	January 3, 2017
Centrifugal chillers and positive displacement chillers (new)	Propylene (R-1270), R-443A	January 3, 2017
Refrigeration		
Cold storage warehouses (new)	Propylene (R-1270), R-443A	January 3, 2017

^a All refrigerants identified as or otherwise meeting the criteria for flammability Class 3 in American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 34–2013. All refrigerants meeting the criteria for flammability Class 3 include, but are not limited to, R-170 (ethane), R-290 (propane), R-600a (isobutane), R-1270 (propylene), R-441A, R-443A and refrigerant products sold under the names R-22a, 22a, Blue Sky 22a refrigerant, Coolant Express 22a, DURACOOOL-22a, EC-22, Ecofreeez EF-22a, Envirosafe 22a, ES-22a, Frost 22a, HC-22a, Maxi-Fridge, MX-22a, Oz-Chill 22a, Priority Cool, and RED TEK 22a.

CHANGE OF LISTING STATUS

End-Uses	Substitutes	Date of Change of Status
Air Conditioning		
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC-245fa, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A, R-424A, R-434A, R-438A, R-507A, RS-44 (2003 composition), and THR-03	Unacceptable, except as otherwise allowed under a narrowed use limit, as of January 1, 2024
Centrifugal chillers (new)	HFC-134a for military marine vessels	Acceptable, subject to narrowed use limits, as of January 1, 2024
Centrifugal chillers (new)	HFC-134a and R-404A for human-rated spacecraft and related support equipment	Acceptable, subject to narrowed use limits, as of January 1, 2024
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 composition), SP34E, and THR-03	Unacceptable, except as otherwise allowed under a narrowed use limit, as of January 1, 2024
Positive displacement chillers (new)	HFC-134a for military marine vessels	Acceptable, subject to narrowed use limits, as of January 1, 2024
Positive displacement chillers (new)	HFC-134a and R-404A for human-rated spacecraft and related support equipment	Acceptable, subject to narrowed use limits, as of January 1, 2024
Refrigeration		
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R-428A, R-434A, R-438A, R-507A, and RS-44 (2003 composition)	Unacceptable, as of January 1, 2023

End-Uses	Substitutes	Date of Change of Status
Retail food refrigeration – refrigerated food processing and dispensing equipment (new)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	Unacceptable, as of January 1, 2021
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, and THR-03	Unacceptable, as of January 1, 2021
Foam Blowing		
Rigid polyurethane (PU) high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI ^a	<ul style="list-style-type: none"> • Unacceptable for all uses, except military or space- and aeronautics-related applications, as of January 1, 2020 • Acceptable, subject to narrowed use limits, for military or space- and aeronautics-related applications, as of January 1, 2020 • Unacceptable for military or space- and aeronautics-related applications as of January 1, 2025
Rigid PU low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI ^b	<ul style="list-style-type: none"> • Unacceptable for all uses, except military or space- and aeronautics-related applications, as of January 1, 2021 • Acceptable, subject to narrowed use limits, for military or space- and aeronautics-related applications, as of January 1, 2021 • Unacceptable for military or space- and aeronautics-related applications as of January 1, 2025
Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI ^c	Unacceptable, as of January 1, 2020
All foam blowing end-uses except for rigid PU spray foam	All HFCs and HFC blends listed in EPA's July 2015 final rule as unacceptable for space- and aeronautics-related applications as of January 1, 2022	Unacceptable for space- and aeronautics-related applications as of January 1, 2025
Flexible PU foam	Methylene chloride	Unacceptable, as of January 3, 2017

^a Closed cell foam products and products containing closed cell foams (in all applications except military or space- and aeronautics-related applications) manufactured on or before January 1, 2020, may be used after that date. Closed cell foam products and products containing closed cell foams in military or space- and aeronautics-related applications manufactured or before January 1, 2025, may be used after that date.

^b Low pressure two-component spray foam kits manufactured or before January 1, 2025, may be used after that date. [Note: EPA intends to issue a rule revision to correct this date to be consistent with the intent expressed in the preamble.]

^c One-component foam sealant cans manufactured on or before January 1, 2020, may be used after that date.

OTHER CHANGES

End-Uses	Change
All Foam Blowing End-Uses (except rigid PU low-pressure two-component spray foam, rigid PU one-component spray foam sealants, flexible PU foam, and integral skin PU foam)	Prohibit use of closed cell foam products and products that contain closed cell foam manufactured with an unacceptable foam blowing agent on or before the later of: 1) December 1, 2017, or 2) the date when the foam blowing agent is unacceptable.
Fire Suppression and Explosion Protection – Total Flooding	Clarify that Powdered Aerosol D (Stat-X®) is listed as acceptable, and that the previously issued use condition is no longer required as of January 3, 2017