

**MEMORANDUM**

**To:** Charlene Dindo, LCAR Committee Assistant

**From:** Julie Moore, Secretary, Agency of Natural Resources

**Date:** October 15, 2020

**Re:** Final Proposed Rule for the phase-down of hydrofluorocarbons in Vermont

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Please find attached a copy of the filing for the final proposed rule for the phase-down of hydrofluorocarbons in Vermont.

A copy of this filing for the final proposed rule is also being submitted to Louise Corliss at the VT State Archives & Records Administration.

If you have any questions or need additional information, please contact [megan.otoole@vermont.gov](mailto:megan.otoole@vermont.gov) or (802) 249-9882.

**Cc:** Louise Corliss, VT State Archives & Records Administration

## Administrative Procedures – Final Proposed Rule Filing

### **Instructions:**

In accordance with Title 3 Chapter 25 of the Vermont Statutes Annotated and the “Rule on Rulemaking” adopted by the Office of the Secretary of State, this filing will be considered complete upon filing and acceptance of these forms with the Office of the Secretary of State, and the Legislative Committee on Administrative Rules.

All forms requiring a signature shall be original signatures of the appropriate adopting authority or authorized person, and all filings are to be submitted at the Office of the Secretary of State, no later than 3:30 pm on the last scheduled day of the work week.

The data provided in text areas of these forms will be used to generate a notice of rulemaking in the portal of “Proposed Rule Postings” online, and the newspapers of record if the rule is marked for publication. Publication of notices will be charged back to the promulgating agency.

**PLEASE REMOVE ANY COVERSHEET OR FORM NOT  
REQUIRED WITH THE CURRENT FILING BEFORE DELIVERY!**

**Certification Statement:** As the adopting Authority of this rule (see 3 V.S.A. § 801 (b) (11) for a definition), I approve the contents of this filing entitled:

### **Rules regarding phase down of the use of Hydrofluorocarbons**

/s/ Julie Moore, P.E., on 10/15/20.  
(signature) (date)

Printed Name and Title:

Julie Moore, Secretary

Agency of Natural Resources

RECEIVED BY: \_\_\_\_\_

- Coversheet
- Adopting Page
- Economic Impact Analysis
- Environmental Impact Analysis
- Strategy for Maximizing Public Input
- Scientific Information Statement (if applicable)
- Incorporated by Reference Statement (if applicable)
- Clean text of the rule (Amended text without annotation)
- Annotated text (Clearly marking changes from previous rule)
- ICAR Minutes
- Copy of Comments
- Responsiveness Summary

1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

2. PROPOSED NUMBER ASSIGNED BY THE SECRETARY OF STATE

20P-016

3. ADOPTING AGENCY:

Agency of Natural Resources

4. PRIMARY CONTACT PERSON:

*(A PERSON WHO IS ABLE TO ANSWER QUESTIONS ABOUT THE CONTENT OF THE RULE).*

Name: Collin Smythe

Agency: Agency of Natural Resources

Mailing Address: 1 National Life Dr, Davis 4, Montpelier, VT 05620

Telephone: 802 689 - 0003 Fax: -

E-Mail: collin.smythe@vermont.gov

Web URL *(WHERE THE RULE WILL BE POSTED)*:

<https://dec.vermont.gov/air-quality/laws>

5. SECONDARY CONTACT PERSON:

*(A SPECIFIC PERSON FROM WHOM COPIES OF FILINGS MAY BE REQUESTED OR WHO MAY ANSWER QUESTIONS ABOUT FORMS SUBMITTED FOR FILING IF DIFFERENT FROM THE PRIMARY CONTACT PERSON).*

Name: Megan O'Toole

Agency: Agency of Natural Resources

Mailing Address: 1 National Life Dr, Davis 3, Montpelier, VT 05620

Telephone: 802 249 - 9882 Fax: -

E-Mail: megan.otoole@vermont.gov

6. RECORDS EXEMPTION INCLUDED WITHIN RULE:

*(DOES THE RULE CONTAIN ANY PROVISION DESIGNATING INFORMATION AS CONFIDENTIAL; LIMITING ITS PUBLIC RELEASE; OR OTHERWISE EXEMPTING IT FROM INSPECTION AND COPYING?)* No

IF YES, CITE THE STATUTORY AUTHORITY FOR THE EXEMPTION:

PLEASE SUMMARIZE THE REASON FOR THE EXEMPTION:

7. LEGAL AUTHORITY / ENABLING LEGISLATION:

*(THE SPECIFIC STATUTORY OR LEGAL CITATION FROM SESSION LAW INDICATING WHO THE ADOPTING ENTITY IS AND THUS WHO THE SIGNATORY SHOULD BE. THIS SHOULD BE A SPECIFIC CITATION NOT A CHAPTER CITATION).*

Act 65 (2019)

8. EXPLANATION OF HOW THE RULE IS WITHIN THE AUTHORITY OF THE AGENCY:

The Agency is required to adopt these rules pursuant to Act 65, Sec. 2(a).

9. THE FILING HAS CHANGED SINCE THE FILING OF THE PROPOSED RULE.

10. THE AGENCY HAS INCLUDED WITH THIS FILING A LETTER EXPLAINING IN DETAIL WHAT CHANGES WERE MADE, CITING CHAPTER AND SECTION WHERE APPLICABLE.

11. SUBSTANTIAL ARGUMENTS AND CONSIDERATIONS WERE RAISED FOR OR AGAINST THE ORIGINAL PROPOSAL.

12. THE AGENCY HAS INCLUDED COPIES OF ALL WRITTEN SUBMISSIONS AND SYNOPSES OF ORAL COMMENTS RECEIVED.

13. THE AGENCY HAS INCLUDED A LETTER EXPLAINING IN DETAIL THE REASONS FOR THE AGENCY'S DECISION TO REJECT OR ADOPT THEM.

14. CONCISE SUMMARY (150 WORDS OR LESS):

The purpose of this Rule is to achieve greenhouse gas emissions reductions through the phase out of high global warming potential hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses.

15. EXPLANATION OF WHY THE RULE IS NECESSARY:

The rule is necessary to ensure a phase down in the use of high global warming potential hydrofluorocarbons (HFCs) in Vermont. HFCs are one of the fastest growing sectors of greenhouse gases in the United States and the world and are generally many times more potent than carbon dioxide in terms of their ability to warm the planet. Reducing the use of HFCs is an important step in slowing the rate of global warming and in making progress toward Vermont's greenhouse gas emissions reduction goals.

16. EXPLANATION OF HOW THE RULE IS NOT ARBITRARY:

## Final Proposed Coversheet

This rule is not arbitrary because it incorporates phase out dates and requirements that are based on the availability of HFC substitutes, and a demonstrated need for the reduction of the use of substances with a high global warming potential.

### 17. LIST OF PEOPLE, ENTERPRISES AND GOVERNMENT ENTITIES AFFECTED BY THIS RULE:

This Rule applies to any person who offers a product or equipment for sale, lease, or rent, or who installs or otherwise causes any equipment or product to enter into commerce in Vermont if that equipment or product consists of, uses, or will use a prohibited substitute in an air conditioning and refrigeration equipment, aerosol propellant, or foam end-use listed in the Rule.

### 18. BRIEF SUMMARY OF ECONOMIC IMPACT (150 WORDS OR LESS):

The economic impact of the phase-down of high global warming potential (GWP) HFCs varies because of the large number of effected end-uses and prohibited HFCs. Often the substitute refrigerant can be somewhat more expensive but can provide lifetime net benefits from increases in energy efficiency. Vermont is coordinating with other states in the U.S. Climate Alliance who are adopting similar regulations to maintain consistency and to better understand impacts and concerns from industry groups.

Because several surrounding states are implementing similar regulations, any potential economic impacts from this phase-down would likely occur regardless of this rule, and so this rule should have a negligible economic impact on Vermont entities. Many manufacturers of the end-use products subject to the rule have already begun phasing down high GWP HFCs and so the industry is currently working to implement the necessary phase down schedules further lessening the impact of this specific rule.

### 19. A HEARING WAS HELD.

### 20. HEARING INFORMATION

(THE FIRST HEARING SHALL BE NO SOONER THAN 30 DAYS FOLLOWING THE POSTING OF NOTICES ONLINE).

IF THIS FORM IS INSUFFICIENT TO LIST THE INFORMATION FOR EACH HEARING PLEASE ATTACH A SEPARATE SHEET TO COMPLETE THE HEARING INFORMATION.

Final Proposed Coversheet

Date: 7/30/2020

Time: 03:00 PM

Street Address: Meeting will be held virtually, link to join meeting available at <https://dec.vermont.gov/air-quality/laws/recent-regs>

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

21. DEADLINE FOR COMMENT (NO EARLIER THAN 7 DAYS FOLLOWING LAST HEARING):

8/6/2020

KEYWORDS (PLEASE PROVIDE AT LEAST 3 KEYWORDS OR PHRASES TO AID IN THE SEARCHABILITY OF THE RULE NOTICE ONLINE).

hydrofluorocarbons

climate change

HFCs

# Administrative Procedures – Adopting Page

## **Instructions:**

This form must accompany each filing made during the rulemaking process:

Note: To satisfy the requirement for an annotated text, an agency must submit the entire rule in annotated form with proposed and final proposed filings. Filing an annotated paragraph or page of a larger rule is not sufficient. Annotation must clearly show the changes to the rule.

When possible, the agency shall file the annotated text, using the appropriate page or pages from the Code of Vermont Rules as a basis for the annotated version. New rules need not be accompanied by an annotated text.

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### 1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

### 2. ADOPTING AGENCY:

Agency of Natural Resources

### 3. TYPE OF FILING (*PLEASE CHOOSE THE TYPE OF FILING FROM THE DROPDOWN MENU BASED ON THE DEFINITIONS PROVIDED BELOW*):

- **AMENDMENT** - Any change to an already existing rule, even if it is a complete rewrite of the rule, it is considered an amendment as long as the rule is replaced with other text.
- **NEW RULE** - A rule that did not previously exist even under a different name.
- **REPEAL** - The removal of a rule in its entirety, without replacing it with other text.

This filing is **A NEW RULE** .

### 4. LAST ADOPTED (*PLEASE PROVIDE THE SOS LOG#, TITLE AND EFFECTIVE DATE OF THE LAST ADOPTION FOR THE EXISTING RULE*):

# Administrative Procedures – Economic Impact Analysis

## **Instructions:**

In completing the economic impact analysis, an agency analyzes and evaluates the anticipated costs and benefits to be expected from adoption of the rule; estimates the costs and benefits for each category of people enterprises and government entities affected by the rule; compares alternatives to adopting the rule; and explains their analysis concluding that rulemaking is the most appropriate method of achieving the regulatory purpose.

Rules affecting or regulating schools or school districts must include cost implications to local school districts and taxpayers in the impact statement, a clear statement of associated costs, and consideration of alternatives to the rule to reduce or ameliorate costs to local school districts while still achieving the objectives of the rule (see 3 V.S.A. § 832b for details).

Rules affecting small businesses (excluding impacts incidental to the purchase and payment of goods and services by the State or an agency thereof), must include ways that a business can reduce the cost or burden of compliance or an explanation of why the agency determines that such evaluation isn't appropriate, and an evaluation of creative, innovative or flexible methods of compliance that would not significantly impair the effectiveness of the rule or increase the risk to the health, safety, or welfare of the public or those affected by the rule.

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### 1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

### 2. ADOPTING AGENCY:

Agency of Natural Resources

### 3. CATEGORY OF AFFECTED PARTIES:

*LIST CATEGORIES OF PEOPLE, ENTERPRISES, AND GOVERNMENTAL ENTITIES POTENTIALLY AFFECTED BY THE ADOPTION OF THIS RULE AND THE ESTIMATED COSTS AND BENEFITS ANTICIPATED:*

This rule will affect any person who sells, leases or rents, or any person who installs the equipment or products included in the end-use categories in the rule. Costs associated with this rule will be incredibly varied because of the large range of end uses and prohibited substances, and will depend upon the price of the necessary alternatives and any necessary changes to equipment or manufacturing

## Economic Impact Analysis

processes. The number of manufacturers actually using these prohibited HFCs in their processes in Vermont is thought to be very small and so the economic impact would depend mainly on the potential additional costs listed above that are passed on to consumers of the effected products in Vermont. California completed an economic impact analysis for a similar regulation and found that often the substitutes could be somewhat more expensive but also that the substitutes were more energy efficient, which could lead to net cost savings over time. It should also be noted that EPA had already begun the phase down of high global warming potential (GWP) HFCs, so industry is already in the process of transitioning to approved substitutes. A number of other larger neighboring states have, or are in the process of, adopting similar regulations to reduce emissions of high GWP HFCs, and so these potential additional costs to consumers in Vermont will likely occur whether or not this rulemaking takes place.

### 4. IMPACT ON SCHOOLS:

*INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON PUBLIC EDUCATION, PUBLIC SCHOOLS, LOCAL SCHOOL DISTRICTS AND/OR TAXPAYERS CLEARLY STATING ANY ASSOCIATED COSTS:*

Impact on schools will be minimal, and will likely be limited to school districts that purchase or retrofit products or equipment included in the end-use categories in the rule. As stated above, the impacts vary by equipment type and necessary substitute. It is possible that new equipment with low global warming potential substitutes will be somewhat more expensive, but is likely to also produce energy efficiency savings and so could provide net benefits over time. It is also true that this transition is happening on a larger scale outside of Vermont, and so these potential costs will likely be incurred whether or not this specific rulemaking occurs.

### 5. ALTERNATIVES: *CONSIDERATION OF ALTERNATIVES TO THE RULE TO REDUCE OR AMELIORATE COSTS TO LOCAL SCHOOL DISTRICTS WHILE STILL ACHIEVING THE OBJECTIVE OF THE RULE.*

The Agency has amended some of the phase-out dates for end-uses as originally required in Act 65. See

## Economic Impact Analysis

supplemental Technical Support Document for an explanation and analysis of these amendments.

### 6. IMPACT ON SMALL BUSINESSES:

*INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON SMALL BUSINESSES (EXCLUDING IMPACTS INCIDENTAL TO THE PURCHASE AND PAYMENT OF GOODS AND SERVICES BY THE STATE OR AN AGENCY THEREOF):*

Impact on small businesses will be minimal, and will likely be limited to businesses that purchase or retrofit products or equipment included in the end-use categories in the rule. As stated above, the impacts vary by equipment type and necessary substitute. It is possible that new equipment with low global warming potential substitutes will be somewhat more expensive, but is likely to also produce energy efficiency savings and so could provide net benefits over time. It is also true that this transition is happening on a larger scale outside of Vermont, and so these potential costs will likely be incurred whether or not this specific rulemaking occurs.

### 7. SMALL BUSINESS COMPLIANCE: *EXPLAIN WAYS A BUSINESS CAN REDUCE THE COST/BURDEN OF COMPLIANCE OR AN EXPLANATION OF WHY THE AGENCY DETERMINES THAT SUCH EVALUATION ISN'T APPROPRIATE.*

This evaluation is not applicable. Small businesses should not have to find ways to reduce costs or burden associated with implementation of this rule because compliant end-uses should be widely available on the market by the corresponding phase-out deadlines in the rule.

### 8. COMPARISON:

*COMPARE THE IMPACT OF THE RULE WITH THE ECONOMIC IMPACT OF OTHER ALTERNATIVES TO THE RULE, INCLUDING NO RULE ON THE SUBJECT OR A RULE HAVING SEPARATE REQUIREMENTS FOR SMALL BUSINESS:*

Given that wide-spread availability of compliant end-uses on the market will likely take place prior to the phase-out dates, and HFC alternatives will be widely available, the Agency does not expect there to be significant economic impact of this rule compared with an alternative or no rule in effect.

9. SUFFICIENCY: *EXPLAIN THE SUFFICIENCY OF THIS ECONOMIC IMPACT ANALYSIS.*

This analysis provides a sufficient explanation of the costs to consumers, schools, and small businesses that may be associated with adoption of this rule, and provides detail on the limited to no economic impact that is likely to take place.

# Administrative Procedures – Environmental Impact Analysis

## **Instructions:**

In completing the environmental impact analysis, an agency analyzes and evaluates the anticipated environmental impacts (positive or negative) to be expected from adoption of the rule; compares alternatives to adopting the rule; explains the sufficiency of the environmental impact analysis.

Examples of Environmental Impacts include but are not limited to:

- Impacts on the emission of greenhouse gases
- Impacts on the discharge of pollutants to water
- Impacts on the arability of land
- Impacts on the climate
- Impacts on the flow of water
- Impacts on recreation
- Or other environmental impacts

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### 1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

### 2. ADOPTING AGENCY:

Agency of Natural Resources

### 3. GREENHOUSE GAS: *EXPLAIN HOW THE RULE IMPACTS THE EMISSION OF GREENHOUSE GASES (E.G. TRANSPORTATION OF PEOPLE OR GOODS; BUILDING INFRASTRUCTURE; LAND USE AND DEVELOPMENT, WASTE GENERATION, ETC.):*

This rule will reduce emissions of greenhouse gases in Vermont through the phase down of high global warming potential (GWP) hydrofluorocarbons (HFCs). Many HFCs used in refrigeration equipment, air conditioning equipment, foam blowing, aerosols, and various other end uses, are many times more potent than carbon dioxide in terms of their potential to warm the planet. By prohibiting the sale, lease, rent, or install of products that use high GWP HFCs in Vermont and replacing them with products using lower GWP alternatives, emissions of greenhouse gases in Vermont will be reduced. This action combined with similar rules in other states will also help to send a market signal to manufacturers to switch from high GWP HFCs

## Environmental Impact Analysis

which will help to drive larger greenhouse gas emissions reductions from the sector on a national and global scale.

4. **WATER:** *EXPLAIN HOW THE RULE IMPACTS WATER (E.G. DISCHARGE / ELIMINATION OF POLLUTION INTO VERMONT WATERS, THE FLOW OF WATER IN THE STATE, WATER QUALITY ETC.):*

No effect

5. **LAND:** *EXPLAIN HOW THE RULE IMPACTS LAND (E.G. IMPACTS ON FORESTRY, AGRICULTURE ETC.):*

No effect

6. **RECREATION:** *EXPLAIN HOW THE RULE IMPACT RECREATION IN THE STATE:*

No effect

7. **CLIMATE:** *EXPLAIN HOW THE RULE IMPACTS THE CLIMATE IN THE STATE:*

Hydrofluorocarbons are one of the fastest growing sectors of greenhouse gas emissions in the country and the world. Switching high GWP HFCs to lower GWP alternatives is an important step in reducing these potent short lived climate pollutants and setting an example to achieve reductions on a more global scale.

8. **OTHER:** *EXPLAIN HOW THE RULE IMPACT OTHER ASPECTS OF VERMONT'S ENVIRONMENT:*

No effect

9. **SUFFICIENCY:** *EXPLAIN THE SUFFICIENCY OF THIS ENVIRONMENTAL IMPACT ANALYSIS.*

This environmental impact analysis is sufficient because it describes how the rule will positively impact the environment by reducing greenhouse gas emissions from HFCs, which is one of the fastest growing sectors of greenhouse gas emissions and therefore a driver of climate change.

## Administrative Procedures – Public Input

### **Instructions:**

In completing the public input statement, an agency describes the strategy prescribed by ICAR to maximize public input, what it did do, or will do to comply with that plan to maximize the involvement of the public in the development of the rule.

This form must accompany each filing made during the rulemaking process:

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1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

2. ADOPTING AGENCY:

Agency of Natural Resources

3. PLEASE DESCRIBE THE STRATEGY PRESCRIBED BY ICAR TO MAXIMIZE PUBLIC INVOLVEMENT IN THE DEVELOPMENT OF THE PROPOSED RULE:

ICAR indicated agreement with ANR's current strategy and encouraged continued outreach to stakeholders throughout the rulemaking process. A list of stakeholders that have been engaged in the pre-draft development of the rule is attached to these forms.

4. PLEASE LIST THE STEPS THAT HAVE BEEN OR WILL BE TAKEN TO COMPLY WITH THAT STRATEGY:

ANR has notified the public of the proposed rule in accordance with the Vermont Administrative Procedures Act. A public hearing was held on July 30, 2020.

5. BEYOND GENERAL ADVERTISEMENTS, PLEASE LIST THE PEOPLE AND ORGANIZATIONS THAT HAVE BEEN OR WILL BE INVOLVED IN THE DEVELOPMENT OF THE PROPOSED RULE:

ANR has been responding to and reaching out to various stakeholders during the development of the draft rule earlier in 2020. ANR also held an informal stakeholder meeting on May 13, 2020 to review a draft of the rule and answer stakeholder questions prior to beginning the formal rulemaking process. Stakeholders include other states considering adoption of HFC phase-down rules,

**Public Input**

industry groups representing manufacturers of HFCs and HFC end-user/es, appliance manufacturers and lobbyists.

## Administrative Procedures – Scientific Information

**THIS FORM IS ONLY REQUIRED WHEN INCORPORATING MATERIALS BY REFERENCE. PLEASE REMOVE PRIOR TO DELIVERY IF IT DOES NOT APPLY TO THIS RULE FILING:**

### **Instructions:**

In completing the Scientific Information Statement, an agency shall provide a brief summary of the scientific information including reference to any scientific studies upon which the proposed rule is based, for the purpose of validity.

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1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

2. ADOPTING AGENCY:

Agency of Natural Resources

3. BRIEF EXPLANATION OF SCIENTIFIC INFORMATION:

The rule is based mainly on portions of the EPA Significant New Alternatives Program (SNAP). The SNAP program implements section 612 of the amended Clean Air Act of 1990 and is used to evaluate ozone-depleting substances (ODS) and their substitutes in terms of their overall risk to human health and the environment. These determinations are made based on a review of the potential substitute in a comparative risk framework and include criteria such as atmospheric effects and related health and environmental effects, ecosystem risks, consumer risks, flammability, toxicity, and cost and availability of the substitute.

Unfortunately some of the substitutes for ozone depleting substances, specifically HFCs, were found to be very potent global warming agents. In 2018, the U.S. Circuit Court of Appeals for the D.C. Circuit ruled that the SNAP program could not be used to require phase-out of HFCs used as replacements for

## Scientific Information

ozone-depleting substances and so portions of the program were partially vacated. EPA has subsequently taken steps to amend the SNAP program to further remove or weaken previous program elements that require reduction or phase out in use of HFCs in certain end-uses. However, the determinations as to whether a specific substitute was classified as acceptable or unacceptable for a specific end use are still scientifically valid and have been incorporated into this rule through reference.

### 4. CITATION OF SOURCE DOCUMENTATION OF SCIENTIFIC INFORMATION:

40 C.F.R. Part 82, Subpart G:

<https://www.law.cornell.edu/cfr/text/40/part-82/subpart-G>

SNAP Rule 21: <https://www.govinfo.gov/content/pkg/FR-2016-12-01/pdf/2016-25167.pdf>

SNAP Rule 20: <https://www.govinfo.gov/content/pkg/FR-2015-07-20/pdf/2015-17066.pdf>

### 5. INSTRUCTIONS ON HOW TO OBTAIN COPIES OF THE SOURCE DOCUMENTS OF THE SCIENTIFIC INFORMATION FROM THE AGENCY OR OTHER PUBLISHING ENTITY:

Copies of the source documents can be obtained by following the URLs listed above in (4).

## Administrative Procedures – Incorporation by Reference

**THIS FORM IS ONLY REQUIRED WHEN INCORPORATING MATERIALS BY REFERENCE. PLEASE REMOVE PRIOR TO DELIVERY IF IT DOES NOT APPLY TO THIS RULE FILING:**

### **Instructions:**

In completing the incorporation by reference statement, an agency describes any materials that are incorporated into the rule by reference and how to obtain copies.

This form is only required when a rule incorporates materials by referencing another source without reproducing the text within the rule itself (e.g. federal or national standards, or regulations).

Incorporated materials will be maintained and available for inspection by the Agency.

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#### 1. TITLE OF RULE FILING:

**Rules regarding phase down of the use of Hydrofluorocarbons**

#### 2. ADOPTING AGENCY:

Agency of Natural Resources

#### 3. DESCRIPTION (*DESCRIBE THE MATERIALS INCORPORATED BY REFERENCE*):

1. 42 U.S.C. § 7671a (§602 of the Clean Air Act), as it read on November 15, 1990;

2. Appendix A of Subpart A of 40 C.F.R. Part 82 (listing of Class I substances), as those read on January 3, 2017;

3. Appendix B of Subpart A of 40 C.F.R. Part 82 (listing of Class II substances), as those read on January 3, 2017

#### 4. FORMAL CITATION OF MATERIALS INCORPORATED BY REFERENCE:

1.

#### 5. OBTAINING COPIES: (*EXPLAIN WHERE THE PUBLIC MAY OBTAIN THE MATERIAL(S) IN WRITTEN OR ELECTRONIC FORM, AND AT WHAT COST*):

1. Copies of Section 602 of the Clean Air Act, listing of Class I and Class II substances, may be found

## Incorporation By Reference

electronically at:

<https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapVI-sec7671a.htm>

2. Appendix A, Subpart A, Part 82, can be obtained electronically at:

[https://www.law.cornell.edu/cfr/text/40/appendix-A\\_to\\_subpart\\_A\\_of\\_part\\_82](https://www.law.cornell.edu/cfr/text/40/appendix-A_to_subpart_A_of_part_82)

3. Appendix B, Subpart A, part 82, can be obtained electronically at:

[https://www.law.cornell.edu/cfr/text/40/appendix-B\\_to\\_subpart\\_A\\_of\\_part\\_82](https://www.law.cornell.edu/cfr/text/40/appendix-B_to_subpart_A_of_part_82)

6. **MODIFICATIONS** (*PLEASE EXPLAIN ANY MODIFICATION TO THE INCORPORATED MATERIALS E.G., WHETHER ONLY PART OF THE MATERIAL IS ADOPTED AND IF SO, WHICH PART(S) ARE MODIFIED*):

N/A

Run Spell Check

Technical Support Document  
for  
Rules regarding the phase-down of the use of hydrofluorocarbons  
Final Proposed Rule Filing

**Introduction**

In 2019, the Governor signed into law Act 65 – An act related to the regulation of hydrofluorocarbons (HFCs). The Act directs the Agency of Natural Resources to adopt rules to establish a schedule of phase-down of the use of HFCs, and allows the Agency to modify deadlines for the phase-down established in Act 65 if the modification will:

- (1) reduce the overall risk to human health or the environment; and
- (2) reflect the earliest date that a substitute is currently or potentially available.

Act 65 directs the Agency to implement rules that achieve a forty percent reduction in use of HFCs by 2030 from 2013 levels. This Technical Support Document (TSD) is meant to supplement the draft text of the final proposed rule filing and the Administrative Procedure Act rulemaking forms to provide detail and analysis of the above rulemaking requirements.

**Modified Phase-down deadlines**

This rule is extending the phase-down deadline for HFCs in the New Vending Machine category, from January 1, 2021 to January 1, 2022.

For the New Vending Machine category the substitute chosen by the manufacturers (R290), which has been selected to also meet Energy Star requirements, would currently prohibited vending machines from being placed in areas of ingress or egress of a building. Vending machine manufacturers are working with regulating bodies to figure out a solution to this issue. Other alternatives are potentially available but were not chosen due to energy efficiency reasons. If the phase-down deadline for this end use is not extended vending machines sold in Vermont would be old models which have already been manufactured and so would not be subject to this rule. Those older models of vending machine are much less energy efficient than the current models being produced and so would have a larger environmental impact than the models being produced now, and would likely be in service for a significant period of time, depending upon the lifetime of the machine.

**Forty percent reduction goal**

Based on an HFC emissions modeling tool developed by California, implementation of a rule adopting SNAP regulations in Vermont will not achieve a 40% reduction in HFC use levels from 2013 by 2030. This is in part due to the fact that emissions of HFCs are growing rapidly and without this rule emissions in 2030 are projected to be approximately 35% above 2013 emissions levels. In order for Vermont to achieve further reductions in the use of HFCs, additional analysis and measures would be required that are not currently within the scope of the authority granted to ANR under Act 65. It is also important to maintain consistency and compatibility with other states implementing similar rules or laws for the

phase out of HFCs. This consistency will provide certainty and sends a market signal to manufacturers that will likely lead to emissions reductions outside of the states with HFC reduction programs in place.



STATE OF VERMONT

*Agency of Natural Resources*

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**Chapter 38: Rules regarding phase-down of the use of  
Hydrofluorocarbons**

Effective Date: [DATE]



VERMONT

Air Quality and Climate Division  
Department of Environmental Conservation  
1 National Life Drive – Davis 4  
Montpelier, VT 05620-3704  
Tele: (802) 828-1288

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## **SUBCHAPTER 1 – GENERAL PROVISIONS**

### **§ 38-101. Authority**

These Rules are adopted by the Secretary of the Agency of Natural Resources pursuant to the authority granted by Act 65 § 2(a) (2019).

### **§ 38-102. Purpose**

The purpose of this Rule is to achieve greenhouse gas emissions reductions through the phase out of high global warming potential hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses.

### **§ 38-103. Applicability**

This Rule applies to any person who offers a product or equipment for sale, lease, or rent, or who installs or otherwise causes any equipment or product to enter into commerce in Vermont if that equipment or product consists of, uses, or will use a prohibited substitute in an end use listed in Section 37-301 of this Rule, unless an end use is subject to an exemption or special use condition listed in Section 37-302 of this Rule.

### **§ 38-104. Severability**

The provisions of these Rules shall be severable. If any provision of these Rules or any application of these Rules to any person or circumstance is deemed to be invalid by a court of competent jurisdiction, the invalidity shall not affect other provisions or applications that can be given effect without the invalid provision or application.

### **§ 38-105. Enforcement**

Each sale, lease, rental, installation or cause of any equipment or product to enter into commerce in Vermont in violation of any of the requirements of this Rule shall constitute a separate violation.

## SUBCHAPTER 2 – DEFINITIONS

For the purposes of this Rule, the following definitions shall apply:

*“Aerosol 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.

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

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

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

*“Chiller”* means a water or heat transfer fluid chilling equipment package custom built in place, or a factory-made and prefabricated assembly of one (1) or more compressors, condensers and evaporators, with interconnections and accessories including controls, designed for the purpose of cooling water or a heat transfer fluid. A chiller is a machine specifically designed to make use of a vapor compression refrigeration cycle or absorption refrigeration cycle to transfer heat from a cold water or heat transfer fluid circulating system to the air, a heat transfer fluid, or other heat exchange media. Chillers can be water-cooled, air-cooled, or evaporatively cooled. Chillers include centrifugal chillers, and positive displacement chillers, including reciprocating, scroll, and screw chillers.

*“Class I substance”* and *“class II substance”* mean those substances listed in the 42 U.S.C. § 7671a, as it read on November 15, 1990 and Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

*“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, 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 all additions or changes in multiple components within a three-year period.

“*Effective Date*” or “*Effective Date of Prohibition*” means the date after which the prohibitions provided in Subchapter 3 of this Rule go into effect.

“*End-use*” means processes or classes of specific applications within industry sectors, including but not limited to those listed in Subchapter 3 of this Rule.

“*Flexible Polyurethane*” means a non-rigid polyurethane foam, 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 that functions as a source of gas to generate bubbles or cells in the mixture during the formation of foam.

“*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 and 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 self-skinning polyurethane foam, including but not limited to that used in car steering wheels and dashboards.

*“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.

*“New”* means: (a) Products or equipment that are manufactured on or after the effective date of the prohibitions in Section 301 of this Rule; (b) Products or equipment first installed for an intended purpose with new or used components on or after the effective date of the prohibitions in Section 301 of this Rule; (c) Products or equipment expanded by the addition of components to increase system capacity on or after the effective date of the prohibitions in Section 301 of this Rule; or (d) Products or equipment replaced or cumulatively replaced such that the cumulative capital cost on or after the effective date of the prohibition in Section 301 of this Rule of replacement exceeds 50% of the capital cost of replacing the whole system.

*“Person”* means an individual, partnership, corporation, association, unincorporated organization, trust, or any other legal or commercial entity, including a joint venture or affiliated ownership. The word "person" also means any subdivision, agency, or instrumentality of this State, of any other state, of the United States, or of any interstate body.

*“Phenolic Insulation Board and Bunstock”* means phenolic insulation including but not limited to that used for roofing and walls. Bunstock or bun stock is a large solid box-like structure formed during the production of polystyrene insulation.

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

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

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

*“Polyurethane”* means a polymer formed principally by the reaction of an isocyanate and a polyol and which would include polyisocyanurate (‘polyiso’).

*“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 substitute, including blends and mixtures, that is used for heat transfer purposes.

*“Refrigerated Food Processing and Dispensing Equipment”* means retail food refrigeration equipment that is designed to process and dispense food and beverages 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 and units designed solely to cool and dispense water.

*“Refrigeration Equipment”* means any stationary device that is designed to contain and use refrigerant gas to establish or maintain colder than ambient temperatures in a confined space, including but not limited to retail or commercial refrigeration equipment, household refrigerators and freezers, and cold storage warehouses.

*“Remote Condensing Units”* means retail refrigeration equipment or units that have a central condensing portion and may consist of one or more compressors, condensers, and receivers assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote

condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

*“Retail 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 an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components.

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

*“Rigid Polyurethane Appliance Foam”* means Polyurethane foam in domestic appliances used for insulation.

*“Rigid Polyurethane Commercial Refrigeration and Sandwich Panels”* means polyurethane foam, used to provide insulation 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; and is field or factory 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.

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

*“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 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 the refrigeration circuit may be 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).

*“Substitute”* means any chemical, product, or alternative manufacturing process, whether new or retrofit, that is used to perform a function previously performed by a class I substance or class II substance or is intended for use in the end-use listed in Subchapter 3 of this Rule, and any substitute subsequently adopted to perform that function, including hydrofluorocarbons.

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

*“Vending Machine”* means a self-contained unit that dispenses goods that must be kept cold or frozen.

## SUBCHAPTER 3 – PROHIBITIONS

### § 38-301. Prohibitions

No person may offer any product or equipment for sale, lease, rent, or install, or otherwise cause any equipment or product to enter into commerce in Vermont that uses a substitute in any end-use listed in the following table.

**Table 1: End-use and Prohibited Substitutes.**

#### End-Use Category: Aerosol Propellants

End-Use	Prohibited Substitutes	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC-134a	January 1, 2021

#### End-Use Category: Air Conditioning

End-Use	Prohibited Substitutes	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 Substitutes	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023

Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
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	January 1, 2021

	(2002 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**

<b>End-Use</b>	<b>Prohibited Substitutes</b>	<b>Effective Date</b>
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

**§ 38-302. Exemptions and Special Use Conditions**

(a) Except where existing equipment is retrofit, nothing in this Rule shall require a person that acquired a product or equipment used for an end-use listed in Section 301 of this Rule prior to a corresponding end-use effective date to cease use of that product or equipment.

(b) Products or equipment used for an end-use listed in Table 1 of Section 301 of this Rule and manufactured prior to an applicable end-use prohibition effective date in Table 1 (including foam systems not yet applied on site) may be offered for sale, lease, rent, or installed or used after an applicable end-use prohibition effective date in Table 1.

(c) Notwithstanding Section 301 of this Section, the following prohibited substitutes and associated end-use categories are subject to special use conditions in Table 2 below.

**Table 2: Special Use Conditions for prohibited substitutes.**

End-Use Category	Prohibited Substitutes	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical

		coolant sprays for pain relief; 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	All substitutes	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except Rigid polyurethane (PU) spray foam	All substitutes	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.
Rigid polyurethane (PU) two-component spray foam	All substitutes	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.



STATE OF VERMONT

*Agency of Natural Resources*

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**Chapter 38: Rules regarding phase-down of the use of  
Hydrofluorocarbons**

Effective Date: [DATE]



VERMONT

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## SUBCHAPTER 1 – GENERAL PROVISIONS

### § 387-101. Authority

These Rules are adopted by the Secretary of the Agency of Natural Resources pursuant to the authority granted by Act 65 § 2(a) (2019).

### § 387-102. Purpose

The purpose of this Rule is to achieve greenhouse gas emissions reductions through the phase out of high global warming potential hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses.

### § 387-103. Applicability

This Rule applies to any person who offers a product or equipment for sale, lease, or rent, or who installs or otherwise causes any equipment or product to enter into commerce in Vermont if that equipment or product consists of, uses, or will use a prohibited substitute in an end use listed in Section 37-301 of this Rule, unless an end use is subject to an exemption or special use condition listed in Section 37-302 of this Rule.

### § 387-104. Severability

The provisions of these Rules shall be severable. If any provision of these Rules or any application of these Rules to any person or circumstance is deemed to be invalid by a court of competent jurisdiction, the invalidity shall not affect other provisions or applications that can be given effect without the invalid provision or application.

### § 387-105. Enforcement

Each sale, lease, rental, installation or cause of any equipment or product to enter into commerce in Vermont in violation of any of the requirements of this Rule shall constitute a separate violation.

## SUBCHAPTER 2 – DEFINITIONS

For the purposes of this Rule, the following definitions shall apply:

*“Aerosol 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.

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

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

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

*“Chiller”* means a water or heat transfer fluid chilling equipment package custom built in place, or a factory-made and prefabricated assembly of one (1) or more compressors, condensers and evaporators, with interconnections and accessories including controls, designed for the purpose of cooling water or a heat transfer fluid. A chiller is a machine specifically designed to make use of a vapor compression refrigeration cycle or absorption refrigeration cycle to transfer heat from a cold water or heat transfer fluid circulating system to the air, a heat transfer fluid, or other heat exchange media. Chillers can be water-cooled, air-cooled, or evaporatively cooled. Chillers include centrifugal chillers, and positive displacement chillers, including reciprocating, scroll, and screw chillers.

*“Class I substance”* and *“class II substance”* mean those substances listed in the 42 U.S.C. § 7671a, as it read on November 15, 1990 and Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

*“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, 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 all additions or changes in multiple components within a three-year period.

“*Effective Date*” or “*Effective Date of Prohibition*” means the date after which the prohibitions provided in Subchapter 3 of this Rule go into effect.

“*End-use*” means processes or classes of specific applications within industry sectors, including but not limited to those listed in Subchapter 3 of this Rule.

“*Flexible Polyurethane*” means a non-rigid polyurethane foam, 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 that functions as a source of gas to generate bubbles or cells in the mixture during the formation of foam.

“*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 and 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 self-skinning polyurethane foam, including but not limited to that used in car steering wheels and dashboards.

*“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.

*“New”* means: (a) Products or equipment that are manufactured on or after the effective date of the prohibitions in Section 301 of this Rule; (b) Products or equipment first installed for an intended purpose with new or used components on or after the effective date of the prohibitions in Section 301 of this Rule; (c) Products or equipment expanded by the addition of components to increase system capacity on or after the effective date of the prohibitions in Section 301 of this Rule; or (d) Products or equipment replaced or cumulatively replaced such that the cumulative capital cost on or after the effective date of the prohibition in Section 301 of this Rule of replacement exceeds 50% of the capital cost of replacing the whole system.

*“Person”* means an individual, partnership, corporation, association, unincorporated organization, trust, or any other legal or commercial entity, including a joint venture or affiliated ownership. The word "person" also means any subdivision, agency, or instrumentality of this State, of any other state, of the United States, or of any interstate body.

*“Phenolic Insulation Board and Bunstock”* means phenolic insulation including but not limited to that used for roofing and walls. Bunstock or bun stock is a large solid box-like structure formed during the production of polystyrene insulation.

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

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

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

*“Polyurethane”* means a polymer formed principally by the reaction of an isocyanate and a polyol and which would include polyisocyanurate (‘polyiso’).

*“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 substitute, including blends and mixtures, that is used for heat transfer purposes.

*“Refrigerated Food Processing and Dispensing Equipment”* means retail food refrigeration equipment that is designed to process and dispense food and beverages 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 and units designed solely to cool and dispense water.

*“Refrigeration Equipment”* means any stationary device that is designed to contain and use refrigerant gas to establish or maintain colder than ambient temperatures in a confined space, including but not limited to retail or commercial refrigeration equipment, household refrigerators and freezers, and cold storage warehouses.

*“Remote Condensing Units”* means retail refrigeration equipment or units that have a central condensing portion and may consist of one or more compressors, condensers, and receivers assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote

condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

*“Retail 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 an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components.

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

*“Rigid Polyurethane Appliance Foam”* means Polyurethane foam in domestic appliances used for insulation.

*“Rigid Polyurethane Commercial Refrigeration and Sandwich Panels”* means polyurethane foam, used to provide insulation 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; and is field or factory 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.

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

*“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 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 the refrigeration circuit may be 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).

*“Substitute”* means any chemical, product, or alternative manufacturing process, whether new or retrofit, that is used to perform a function previously performed by a class I substance or class II substance or is intended for use in the end-use listed in Subchapter 3 of this Rule, and any substitute subsequently adopted to perform that function, including hydrofluorocarbons.

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

*“Vending Machine”* means a self-contained unit that dispenses goods that must be kept cold or frozen.

## SUBCHAPTER 3 – PROHIBITIONS

### § 387-301. Prohibitions

No person may offer any product or equipment for sale, lease, rent, or install, or otherwise cause any equipment or product to enter into commerce in Vermont that uses a substitute in any end-use listed in the following table.

**Table 1: End-use and Prohibited Substitutes.**

#### End-Use Category: Aerosol Propellants

End-Use	Prohibited Substitutes	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC-134a	January 1, 2021

#### End-Use Category: Air Conditioning

End-Use	Prohibited Substitutes	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 Substitutes	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023

Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
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	January 1, 2021

	(2002 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**

<b>End-Use</b>	<b>Prohibited Substitutes</b>	<b>Effective Date</b>
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 <del>2</del>
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 <del>2</del>
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 <del>2</del>
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

**§ 387-302. Exemptions and Special Use Conditions**

(a) Except where existing equipment is retrofit, nothing in this Rule shall require a person that acquired a product or equipment used for an end-use listed in Section 301 of this Rule prior to a corresponding end-use effective date to cease use of that product or equipment.

(b) Products or equipment used for an end-use listed in Table 1 of Section 301 of this Rule and manufactured prior to an applicable end-use prohibition effective date in Table 1 (including foam systems not yet applied on site) may be offered for sale, lease, rent, or installed or used after an applicable end-use prohibition effective date in Table 1.

(c) Notwithstanding Section 301 of this Section, the following prohibited substitutes and associated end-use categories are subject to special use conditions in Table 2 below.

**Table 2: Special Use Conditions for prohibited substitutes.**

End-Use Category	Prohibited Substitutes	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical

		coolant sprays for pain relief; 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	All substitutes	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except Rigid polyurethane (PU) spray foam	All substitutes	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.
Rigid polyurethane (PU) two-component spray foam	All substitutes	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.



## **INTERAGENCY COMMITTEE ON ADMINISTRATIVE RULES (ICAR) MINUTES**

**Meeting Date/Location:** June 8, 2020, Microsoft Teams Meeting  
**Members Present:** Steve Knudson - acting as Chair, Dirk Anderson, Ashley Berliner, Jennifer Mojo, John Kessler, Matt Langham and Clare O'Shaughnessy  
**Members Absent:** Brad Ferland and Diane Bothfeld  
**Minutes By:** Melissa Mazza-Paquette

- 2:02 p.m. meeting called to order, welcome and introductions.
- Review and approval of minutes from the May 11, 2020 meeting.
- No additions/deletions to agenda. Agenda approved as drafted.
- Note: An emergency rule titled 'Suspension of Prescription Drug Deductibles for Preventive Medications' by the Department of Financial Regulation was approved by Deputy Secretary/ICAR Chair Ferland on 6/1/20.
- No public comments made.
- Presentation of Proposed Rule on page 2 to follow:
  1. Rules regarding phase down of the use of Hydrofluorocarbons, Agency of Natural Resources, page 2
- Next scheduled meeting is July 13, 2020 at 2:00 p.m.
- 2:30 p.m. meeting adjourned.

## **Proposed Rule: Rules regarding phase down of the use of Hydrofluorocarbons, Agency of Natural Resources**

**Presented by Collin Smythe and Megan O'Toole**

Motion made to accept the rule by John Kessler, seconded by Dirk Anderson, and passed unanimously except for Jen Mojo who abstained, with the following recommendations:

1. Proposed Rule Coversheet, page 3, #12: Mention the collaboration with the U.S. Climate Alliance on the framework to ensure consistency across the states.
2. Proposed Rule Coversheet, page 3, #12: Quantify 'little economic impact' – such as providing an estimate, range, percentage, etc. or consider using the word 'negligible' instead.
3. Proposed Rule Coversheet, page 4, #14-15: Complete.
4. Economic Impact Analysis, page 1, #3: Include costs and estimates.
5. Economic Impact Analysis, page 2, #3 and #6: Quantify 'minimal'.
6. Economic Impact Analysis, page 3, #9: Provide the foundation for sufficiency.
7. Environmental Impact Analysis, page 2, #9: Provide the foundation for sufficiency.
8. Public Input, page 1, #3: Complete.
9. Public Input, page 1, #3: Attach a list of stakeholders you've reached out to.
10. Proposed Rule, Title: Consider changing 'phase-down' to 'scale-down' or similar if appropriate.

DRAFT

**Summary of verbal and written comments, Response to comments, and Summary of changes for Proposed Rules regarding the Phase-down of hydrofluorocarbons in Vermont.**

**Summary:** The proposed regulatory amendments achieve greenhouse gas emissions reductions through the phase out of high global warming potential hydrofluorocarbons (HFCs) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. The rule is necessary to ensure a phase down in the use of high global warming potential hydrofluorocarbons (HFCs) in Vermont. HFCs are one of the fastest growing sectors of greenhouse gases in the United States and the world and are generally many times more potent than carbon dioxide in terms of their ability to warm the planet. Reducing the use of HFCs is an important step in slowing the rate of global warming and in making progress toward Vermont's greenhouse gas emissions reduction goals.

**Public Comment Period:** The public comment period ended at close of business on August 6, 2020.

**Public Meeting:** A virtual public meeting was held July 30, 2020 at 3:00 pm via Skype. The meeting was attended by stakeholder and industry representatives.

**Comments Received and Response to Comments:** Verbal and/or written comments were received from the American Chemistry Council, the Air-conditioning, Heating & Refrigeration Institute (AHRI), Associated Industries of Vermont, Daikin, Honeywell, Illinois Tool Works, Inc., Matthew Metz, the Natural Resources Defense Council (NRDC), the Polyisocyanurate Insulation Manufacturers Association (PIMA), and a joint comment letter submitted by Arkema, Inc, Kingspan Insulation LLC, Dupont Specialty Products USA, LLC, The Household & Commercial Products Association (HCPA), and Koura Business Group. The comments received, both written and verbal, are summarized below along with the Agency's responses and changes to the proposed rule in response to the comments.

**1. Written comments from the American Chemistry Council are summarized below.**

Comment 1a: Commenter supports the proposed rule in regards to definitions, disclosure, record keeping requirements, and sell through periods and advocates for consistency across all states implementing HFC regulations for foam blowing agents.

Response 1a: The Agency acknowledges the commenters support for the proposed rule and appreciates the need for consistency in HFC regulations in different jurisdictions.

**2. Written and verbal comments from AHRI are summarized below.**

Comment 2a: Commenter points out that building and safety codes will need to be amended and updated to accommodate the phase-in of alternatives to HFCs currently used in end uses that are proposed to be phased out pursuant to the rule. Commenter asks for the Agency's assistance in facilitating the necessary changes.

Response 2a. The Agency acknowledges the comment and will engage with other relevant stakeholders to address this issue.

Comment 2b: Commenter supports the proposed rule as it is consistent with other states pursuing adoption of similar rules.

Response 2b: The Agency acknowledges the commenters support for the proposed rule.

Comment 2c: Commenter suggests the department consider the usage of recovered HFC refrigerants in the phasedown plans for the state. Recovered refrigerants will help reduce the amount of virgin HFC refrigerants entering the state and assist in servicing and maintenance for existing units.

Response 2c: The Agency plans to continue working with the U.S. Climate Alliance HFC Working Group and other states to explore options related to HFC recovery and reuse.

Comment 2d: Commenter suggests the Agency engage both with manufacturers and end-users to determine the impact of COVID-19 on operations and manufacturing as well as end-user financial impact.

Response 2d: The Agency has been engaging with stakeholders, industry, and other states regarding supply chain issues related to the COVID-19 pandemic.

### **3. Written and verbal comments from Associated Industries of Vermont are summarized below.**

Comment 3a: Commenter appreciates the reference to this provision in §37-302 Exemptions and Special Use Conditions of the proposed rule. Commenter notes that, as currently written, (b), (c), and (d) under the definition of "New" in Subchapter 2 of the proposed rule would appear to be triggered by the utilization of products or equipment exempt under 10 VSA §586(b)(3). Commenter recommends that these definitions be redrafted to make clear that they are not triggered by the utilization of products or equipment manufactured prior to an applicable effective date of the relevant restrictions.

Response 3a: The Agency has revised the language in the definition of "New" to clarify that the definitions are effective as of the prohibition dates listed in Section 301 in Table 1 of the Rule. We interpret the definition of "new" along with the exemption in Section 302(b) of the rule, and think that, read together, they address the concerns of the commenter. Therefore, the Agency's interpretation of the definition of "new" is that it is not triggered by utilization of products or equipment manufactured prior to an applicable effective date in Table 1.

### **4. Written comments from Daikin are summarized below.**

Comment 4a: Commenter thanks Vermont for including this sell-through exception which permits the continued sale, lease, rent, installation, and use of equipment manufactured prior to an applicable end-use prohibition effective date. If there is any possible conflict between this sell-through provision and the definition of "new," then Commenter urges the Department to ensure that any necessary change be made to ensure the intent of the sell-through provision is met.

Response 4a: See response 3a.

Comment 4b: Commenter agrees with Comment 2a, and urges the Agency to help facilitate adoption of updated building and safety codes.

Response 4b: See Response 2b.

Comment 4c: Commenter agrees with Comment 2c.

Response 4c: See Response 2c.

Comment 4d: Commenter notes that 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, the Commenter is willing to work with the Agency to provide guidance.

Response 4d: The Agency acknowledges this comment and looks forward to further information from the Commenter on any training efforts.

#### **5. Written comments from Honeywell are summarized below.**

Comment 5a: Commenter is supportive of the proposed rule but notes one area where the rule can be strengthened. The proposed rule would transition several foam end-uses on January 1, 2021, but would delay the transition away from high-GWP HFCs in three foam-end uses by a year, to January 1, 2022. The commenter states that this delay is unnecessary and urges Vermont to maintain a January 1, 2021 transition date for polystyrene extruded boardstock and billet (XPS), rigid polyurethane high-pressure two-component spray foam and rigid polyurethane low-pressure two-component spray foam. The commenter also notes that the supply of insulation materials would not be impacted by the 2021 phase out date as the transition to low-HFC XPS and high and low pressure spray foams has been underway for several years. Additionally, commenter notes that large foam product manufacturers, like DuPont and Owens Corning, have recently made public statements about their readiness to supply low-GWP foam products as of January 1, 2021 to meet the Canadian prohibition on new foam products containing blowing agents with a GWP greater than 150, and to meet similar U.S. state requirements that come into effect on January 1, 2021.

Response 5a. In response to Comment 5a and the supporting documentation provided in the corresponding comment letter, the Agency has revised language in the proposed rule to require phase-out of prohibited substances in Section 301 of the rule for XPS and rigid polyurethane high and low pressure two-component spray foam end uses from January 1, 2022 to January 1, 2021.

#### **6. Written comments from Illinois Tool Works, Inc. are summarized below.**

Comment 6a: Commenters notes the definition relevant to its end-uses are consistent with the end-use settings for their products.

Response 6a. The Agency acknowledges this comment.

Comment 6b: The Commenter supports the effective dates as proposed for commercial stand alone and remote condensing unit refrigeration equipment and XPS and high and low pressure spray foams.

Response 6b: While the Agency does not plan to change the effective date for the commercial stand alone and remote condensing unit refrigeration equipment end-use, the Agency is revising the effective date for XPS and high and low pressure spray foam end-uses for the reasons provided in Comments 5a and 10a.

#### **7. Written comments from Matthew Metz are summarized below.**

Comment 7a: The Commenter is generally supportive of the proposed rule, and makes two recommendations for improving the rule, as noted in Comments 7b and 7c below.

Response 7a: The Agency acknowledges the Commenters general support for the rule and its purpose to mitigation greenhouse gas emissions.

Comment 7b: The Commenter recommends that explicit enforcement language be added to the rule to mitigate non-compliance and communicate the requirements of the law to the public and regulated community. The Commenter specifically recommends reference to the criminal penalty provisions of Chapter 23 of Title 10 in the rule language.

Response 7b: The Agency has decided not to expand upon the language in §38-105 of the rule or reference its specific enforcement authority in the Rule. The Agency will conduct enforcement of the proposed rule pursuant to existing authority in Title 10.

Comment 7c: The Commenter recommends that the Agency include a new Subchapter in the Rule that lists alternatives to prohibited substances in Table 1.

Response 7c: The Agency has not included a list of recommended alternatives to the listed prohibited substances at this time, but may include such a list in future amendments to the rule.

#### **8. Written comments from NRDC are summarized below.**

Comment 8a: The Commenter agrees with the Comment 5a, above, and recommends that the Agency maintain the January 1, 2021 effective date for XPS and low and high pressure spray foam end-uses.

Response 8a. See Response 5a, above.

#### **9. Written comments from PIMA are summarized below.**

Comment 9a: The Commenter is generally supportive of the rule and the effective dates listed in the Foam end-use category, however disagrees with the proposed effective date for XPS and rigid polyurethane high and low pressure two-component spray foam end uses because it is a departure from effective dates in other states' rules.

Response 9b. See Response 5a and 10a, above.

#### **10. Joint written comments from Arkema, Inc, Kingspan Insulation LLC, Dupont Specialty Products USA, LLC, and Koura Business Group are summarized below.**

Comment 10a: The joint Commenters are supportive of the proposed effective date of January 1, 2022 for XPS and high and low pressure spray foam end uses and notes that it will allow the regulated community to more realistically meet the effective dates.

Response 10a. See Response 5a, above. The Agency is persuaded by information provided indicating the regulated community's ability to comply with the 2021 effective date for these end uses, and thinks it is important to be consistent with other states who have adopted or are in the process of adopting HFC phase-out rules, especially other states in the Northeast region. For example, similar rules in New York and Massachusetts have adopted, or propose to adopt, an effective date of January 1, 2021 for these end-uses.

#### **11. Written and verbal comments from Household and Commercial Products Association are summarized below.**

Comment 11a: Commenter is supportive of ANR’s goal of reducing HFC emissions through the adoption of the EPA’s Significant New Alternatives Policy (SNAP) Program rules and the collaboration with other states with similar legislation to maintain consistency for HFC restrictions, especially as relating to aerosol systems and products. Commenter also supports the effective date of prohibition for aerosol propellants as well as the definition of aerosol propellants.

Response 11a. The Agency appreciates these comments and understands the importance of consistency in phase out dates to provide regulatory certainty for industry.

**12. Verbal comments from the Association of Home Appliance Manufacturers are summarized below.**

Comment 12a: Commenter seeks clarification on whether the omission of the word “new” from the language in §38-301 immediately before the word “equipment” is significant or just an oversight. Commenter seeks to ensure that the definition of “new” is related to the date of manufacture relative to the effective date of a prohibition for a particular end-use category.

Response 12a: The omission of the word “new” from the language in §38-301 is intentional because end-use categories in Table 1 specify whether or not a particular prohibition effective date is for a “new” or “retrofit” end-use. “New” and “retrofit” are both defined in Subchapter 2 of the rule.

**Summary of changes made: The following changes to the proposed rule reflect comments received and as noted above.**

**Revision 1:** The Agency has changed the Chapter number of the rule from 37 to 38 to account for other new DEC rules that have been adopted since this rule was proposed. Rule Section numbers have been re-numbered accordingly.

**Revision 2:** The Agency has revised the definition of “New” in Subchapter 2 of the Rule in response to Comments 3a and 4a:

““New” means: (a) Products or equipment that are manufactured on or after the effective date of the prohibitions in Section 301 of this Rule; (b) Products or equipment first installed for an intended purpose with new or used components on or after the effective date of the prohibitions in Section 301 of this Rule; (c) Products or equipment expanded by the addition of components to increase system capacity on or after the effective date of the prohibitions in Section 301 of this Rule; or (d) Products or equipment replaced or cumulatively replaced such that the cumulative capital cost on or after the effective date of the prohibition in Section 301 of this Rule of replacement exceeds 50% of the capital cost of replacing the whole system.”

**Revision 3:** The Agency has revised the effective dates for the XPS and rigid polyurethane high and low pressure two-component spray foam end use categories listed in the Foams portion of Table 1 in Section 301 of the proposed rule in response to Comments 5a, 8a and 9a:

**End-Use Category: Foams**

End-Use	Prohibited Substitutes	Effective Date
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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, 2022 <sup>21</sup>
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, 2022 <sup>21</sup>
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, 2022 <sup>21</sup>

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

August 6, 2020

*via* electronic transmission

Megan O'Toole  
Associate General Counsel  
Department of Environmental Conservation  
Office of General Counsel  
1 National Life Drive, Davis 3  
Montpelier, VT 05620-3901

Subject: HCPA Comments on Vermont Agency of Natural Resources Proposed Rules Regarding Phase-Down of the Use of Hydrofluorocarbons<sup>1</sup>

Dear Ms. O'Toole,

The Household & Commercial Products Association<sup>2</sup> (HCPA) appreciates the opportunity to offer comments on the Vermont Agency of Natural Resources (ANR) proposed rules regarding the phase-down of the use of Hydrofluorocarbons (HFCs). The proposed rule would achieve greenhouse gas emissions reductions through the phase out of high global warming potential (GWP) HFCs (i.e., HFCs with a GWP of greater than 150) in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses by adopting the 2015<sup>3</sup> and 2016<sup>4</sup> United States Environmental Protection Agency (EPA) prohibitions on the use of HFCs as substitutes for ozone-depleting substances. HCPA supports ANR's goal of reducing HFC emission through the adoption of the EPA's Significant New Alternatives Policy (SNAP) Program rules.

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

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<sup>1</sup> Proposed Rule Text can be found at [https://dec.vermont.gov/sites/dec/files/aqc/laws-regs/documents/Vermont\\_HFC\\_Proposed%20Rule\\_DRAFT\\_19May2020\\_CLEAN.pdf](https://dec.vermont.gov/sites/dec/files/aqc/laws-regs/documents/Vermont_HFC_Proposed%20Rule_DRAFT_19May2020_CLEAN.pdf)

<sup>2</sup>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.

<sup>3</sup> Appendix U of Subpart G of 40 CFR Part 82

<sup>4</sup> Appendix V of Subpart G of 40 CFR Part 82

Division, representing the interest of those that manufacture, formulate, supply and market a wide variety of products packaged in an aerosol form.

**I. HCPA Supports Vermont's Actions to Prohibit the Use of High GWP HFCs in a Manner that is Consistent with Other States**

HCPA supports ANR's goal to prohibit the use of high 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. Several other states have enacted legislation or promulgated 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). ANR's proposed rule is consistent with other state actions which provides the regulatory certainty that industry needs for ensuring compliance and for 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, Vermont 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 Supports the Effective Date for Aerosol Propellants**

HCPA supports prohibiting the use of certain high GWP HFC propellants in aerosol products. As HCPA is not aware of any member company utilizing a high GWP HFC as an aerosol propellant unless the use is exempted from the prohibition, HCPA supports an effective date of January 1, 2021 for aerosol propellants.

**III. HCPA Supports the Definition of Aerosol Propellants**

HCPA supports ANR's proposed rule because it is consistent with other state activity to limit the use of high GWP HFCs; however, it is also important to align with existing regulations. HCPA supports ANR's definition of aerosol propellants as it is aligned with the Environmental Protection Agency's (EPA) National Volatile Organic Compound Emission Standards.<sup>5</sup>

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<sup>5</sup> 40 CFR Part 59 Subpart C

IV. **Conclusion**

HCPA appreciates the opportunity to offer these comments on ANR's proposed rule. 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](mailto:ngeorges@thehcpa.org).

Sincerely,

A handwritten signature in cursive script that reads "Nicholas Georges".

Nicholas Georges  
Vice President, Scientific and International Affairs  
Household & Commercial Products Association

cc: Collin Smythe, Environmental Analyst



Center for the  
Polyurethanes Industry

August 6, 2020

Megan O'Toole  
Associate General Counsel  
Air Quality and Climate Division  
Department of Environmental Conservation  
Vermont Agency of Natural Resources  
1 National Life Drive, Davis 3  
Montpelier, VT 05620-3901

Submitted via email to: [megan.otoole@vermont.gov](mailto:megan.otoole@vermont.gov)

**RE: Rules regarding phase down of the use of Hydrofluorocarbons**

Ms. O'Toole,

The American Chemistry Council's Center for the Polyurethanes Industry<sup>1</sup> (CPI) appreciates the opportunity to comment on the Vermont Agency of Natural Resources' Department of Environmental Conservation's (Department) draft *Rules regarding phase-down of the use of Hydrofluorocarbons (HFC)* (proposed rule).

CPI members operate manufacturing facilities and sell polyurethane foam products across the United States. CPI advocates for consistency across all states that are regulating the use of HFC foam blowing agents to help reduce the regulatory burden on polyurethane companies. CPI advocates for consistency in four areas: definitions, disclosure, recordkeeping, and sell-through periods. CPI supports the direction in the proposed rule as it relates to these four areas and appreciates the Department's efforts to align the proposed rule with comments CPI submitted on the pre-publication draft regulations.

The definitions in the proposed rule are technically accurate and the sell-through period is explicit. As stated in our comments on the pre-publication draft, CPI generally opposes recordkeeping requirements, in favor of on-product disclosures. On-product disclosures give regulators and users real time information to ensure compliant products are used in Vermont. CPI does not object to the lack of specific labeling requirements in the proposed rule. CPI members support the following disclosure on polyurethane products "Where sold, compliant with State HFC regulations." As the proposed rule does not restrict the use of voluntary disclosures, CPI anticipates that individual polyurethane companies may decide to use the disclosure statement on polyurethane products sold in Vermont.

If you have any questions or need additional information, please contact me at [Stephen\\_wieroniey@americanchemistry.com](mailto:Stephen_wieroniey@americanchemistry.com), or (202) 249-6617.

Sincerely,

A handwritten signature in black ink that reads 'Stephen Wieroniey'.

Stephen Wieroniey, Director

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<sup>1</sup> 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.





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August 6, 2020

Megan O'Toole  
Vermont Department of Environmental Conservation  
Davis Building - 4th Floor  
One National Life Drive  
Montpelier, VT 05620-3802

Re: AHRI Comments Regarding Vermont proposed rule regarding the phase-down of the use of Hydrofluorocarbons (HFCs).

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Dear Ms. O'Toole,

On behalf of the Air-Conditioning, Heating and Refrigeration Institute (AHRI) I respectfully submit the following comments in response to the Vermont Department of Environmental Conservation Proposed Rule Regarding the Phase-Down of the Use of Hydrofluorocarbons (HFCs).

AHRI is the trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. More than 300 members strong, AHRI is an advocate for the industry and develops standards for and certifies the performance of many of the products manufactured by our members. 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.

For more than a decade, AHRI has worked 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. AHRI appreciates the Department of Environmental Conservation staff's hard work on this proposed rule phasing down the usage of hydrofluorocarbons in the state.

### **AHRI Safe Refrigerant Transition Task Force**

Differences in the properties of next generation refrigerants (e.g., flammability and toxicity) may require changes to current practices to minimize risk while meeting regulations. Some new refrigerants are historic products that have not been used in some time or that will be used with larger charge sizes (e.g., ammonia and hydrocarbons) or different types of equipment.

AHRI formed the Safe Refrigerant Transition Task Force in 2019 to evaluate the end-to-end supply chain for conversion readiness for interested stakeholders, to identify needs, and resolve issues or make recommendations to enable the safe use of low-GWP refrigerants in a timely manner to meet regulatory requirements. The Task Force is also leveraging learnings around the world, including the widespread use of A2L refrigerants in HVACR products in the European Union (EU), Japan, India, and Australia, as well as the auto industry in the EU, U.S., and Canada.

For example, there are currently restrictions related to shipping and storage present in the International Fire Code and via Department of Transportation regulations. It would be helpful to discuss a plan regarding storage and shipping of refrigerants in Vermont and to provide more detail regarding AHRI's efforts to ensure storage and shipping concerns are addressed.

Assistance from the department both in the process of adopting updated safety standards into building codes and in ensuring the regulations timeline and restrictions match with modifications to codes and standards would be a great step in ensuring a safe and timely refrigerant transition without disruption to HVACR equipment.

For additional information, see the AHRI Safe Refrigerants Transition Task Force website. <http://www.ahrinet.org/SafeRefrigerant>

### **The Air Conditioning, Heating and Refrigeration Technical Institute (AHRTI) and Other Research into Next Generation Refrigerants**

Over the course of the past five years, AHRI, in cooperation with the Department of Energy (DOE), the California Air Resources Board (CARB) and other concerned stakeholders have invested nearly \$7 million in research into the behavior and safe use of next generation refrigerants. Research results are made public at the following website. The table in exhibit one shows the most recent summary of this body of research. This research has been used in the development of the safety standards as well as in development of training and in preparation for the transition.

<http://www.ahrinet.org/Resources/Research/AHRI-Flammable-Refrigerants-Research-Initiative>

### **Safety Standards Adoption Into Building Codes**

The use of some low GWP refrigerants may be inhibited because the most recent relevant safety standards have not yet been adopted by existing building codes in Vermont enabling these alternatives. 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. If ASHRAE Standard 15 and UL60335-2-40 are adopted into local building codes, chillers manufacturers could comply with the 2024 transition date. AHRI requests that the Department of Environmental Protection work with Vermont authorities managing building codes to adopt safety standards. AHRI would be willing to provide information regarding the safety standards if helpful.

## **Importance of HFC Regulatory Harmonization**

One area of particular importance to our membership is administrative harmonization across HFC phasedown regulations. We thank you for keeping this in mind during this process. There are twenty-five governors that have committed to implement policies to meet the Paris Climate Agreement and are considering HFC regulations over the coming years. If acting independently, the industry would likely be facing a number of different HFC regulations. In order to make these transitions both effective and manageable without disruption to our critical supply chains, administrative aspects of these phasedowns such as disclosure requirements must be harmonized in order to avoid unnecessary and impractical regulatory burden.

Harmonization is of importance to HVACR manufacturers due to equipment being sold through distributors, meaning that at the time of sale a manufacturer does not know which state the equipment will be sold to. This puts the additional burden on manufacturers to meet every administrative requirement for each state with HFC phase-down regulations. Harmonizing these requirements makes this process feasible and will help to ensure a smooth phasedown of HFCs.

## **Usage of Recovered Refrigerants**

AHRI suggests the department consider the usage of recovered HFC refrigerants in the phasedown plans for the state. Recovered refrigerants will help reduce the amount of virgin HFC refrigerants entering the state, and assist in servicing and maintenance for existing units.

## **Adjustments for COVID-19 Pandemic**

AHRI also suggests the department engage both with manufacturers and end-users to determine the impact of COVID-19 on operations and manufacturing as well as end-user financial impact. AHRI urges the department to engage in these conversations throughout the rulemaking process to determine if the final rule provides sufficient planning time for the refrigerant transition, and whether or not the timeline is harmonized with other states transitioning away from hydrofluorocarbons.

Thank you for providing the opportunity to address these areas of concern throughout the process. With federal action still under consideration, additional flexibility in administrative controls compliance will ensure a positive outcome for the environment and consumers while minimizing regulatory burden for industry. AHRI looks forward to continuing to work with you in the future. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

Christopher Bresee  
State Policy Analyst  
Direct: (703) 600-0333  
Email: [cbresee@ahrinet.org](mailto:cbresee@ahrinet.org)



**DAIKIN U.S. CORPORATION**  
601 13<sup>TH</sup> STREET NW, SUITE 200 SOUTH  
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August 6, 2020

Megan O'Toole  
Vermont Department of Environmental Conservation  
Davis Building - 4<sup>th</sup> Floor  
One National Life Drive  
Montpelier, VT 05620-3802

Regarding Vermont proposed rule regarding the phase-down of the use of Hydrofluorocarbons (HFCs).

---

Dear Ms. Megan O'Toole

The following comments from Daikin US are in response to the Vermont Department of Environmental Conservation's Proposed Rule Regarding the Phase-Down of the Use of Hydrofluorocarbons.

Daikin Industries, Ltd. (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, including Daikin US, 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.

We believe that federal regulations are the most desirable way to regulate the phase-down of hydrofluorocarbons. However, as states move to do so themselves, Daikin's 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.

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.



**DAIKIN U.S. CORPORATION**  
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WASHINGTON, DC 20005  
PHONE: (202) 383-8740

## **Definitions and Sell-Through**

Daikin would like to thank Vermont for including definitions consistent with those of several US Climate Alliance States. Ensuring uniformity across states helps reduce the burden of patchwork regulations

There were some discussions raised by other manufacturers during public meetings around the definition of the word “new” and its compatibility with the sell-through provision included in the regulation.

First, Daikin thanks Vermont for including this sell-through exception which permits the continued sale, lease, rent, installation, and use of equipment manufactured prior to an applicable end-use prohibition effective date. If there is any possible conflict between this sell-through provision and the definition of “new,” then Daikin urges the Department to ensure that any necessary change be made to ensure the intent of the sell-through provision is met.

## **Codes and Standards**

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. Daikin agrees with AHRI that Vermont building codes must enable the use of mildly flammable refrigerants. We encourage the Department of Environmental Protection work with the relevant code authority to adopt ASHRAE 15-2019 and UL 60335-2-40 3<sup>rd</sup> edition, or equivalent (e.g. model codes that include those standards) into local building codes so that chillers manufacturers can comply with the 2024 transition date.

## **Reclaim**

Daikin recommends Vermont consider adding provisions to encourage 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 any state’s strategy to reduce HFC emissions should 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 Vermont’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 take affirmative steps to promote reclamation.

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



**DAIKIN U.S. CORPORATION**  
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WASHINGTON, DC 20005  
PHONE: (202) 383-8740

### **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 to provide guidance.

Thank you for the opportunity to provide these comments.

Sincerely,

A handwritten signature in black ink that reads "Charlie McCrudden".

Charlie McCrudden  
Director, Government Affairs

Collin Smythe  
Megan O'Toole  
Agency of Natural Resources  
1 National Life Dr,  
Montpelier, VT 05620



RE: Natural Resources Defense Council Comments on HFC Regulation

Dear Mr. Smythe and Ms. O'Toole,

The Natural Resources Defense Council (NRDC) appreciates the opportunity to comment on the proposed rule and commends the Agency of Natural Resources for taking prompt action on HFCs.

NRDC is a non-profit environmental organization with a network of 3 million members and online activists and more than 650 lawyers, scientists and policy advocates working to protect our environment and ensure that everyone has access to clean air, water and the wild. Within our Climate & Clean Energy program, our team has been working to end the use of climate warming refrigerants for several decades through engagement at the state, national and international levels.

NRDC encourages prompt adoption of the proposed rule with one modification on the prohibition date for specific foam products. There is no need to delay the prohibition date for XPS, low-pressure two-component spray foam, and high-pressure two-component spray foam to 2022.

**I. The delay will forgo important climate benefits**

These three products are closed-cell foams meaning that a significant amount of the blowing agent remains trapped in the cells during the product's lifetime, leaking gradually until the end of the product's useful life. Since these foams currently use high-GWP HFCs (GWP~ 1400), they emit these climate warming chemicals from cradle to grave. A delay in the prohibition date for these products will lock-in additional emissions for years to come. These foam products are used in building insulation that remains in place anywhere from 15 to 30 years.

**II. U.S. industry had ample time to prepare for the transition**

These foam products were scheduled to transition in 2020 (high-pressure) and 2021 (low-pressure, XPS) under the U.S. Environmental Protection Agency's (EPA) Significant New Alternatives Policy (SNAP) rules that were finalized in 2015 and 2016. The rules sent a clear message to industry to transition away from these climate super pollutants. Several companies invested the time and money necessary to comply with the now partially vacated rules. They have successfully developed blowing agents and products that will comply with the 2021 prohibition date established in several states and Canada. A delay to that date in Vermont will only penalize the companies that are successfully delivering results.

**III. Manufacturers have announced capacity to comply with regulations in several states and Canada**

There is no market or technological need for this delay. In addition to Vermont, U.S. foam manufacturers are required to comply with the HFC prohibitions in California, Washington, New Jersey and Colorado which all have adopted earlier transitions dates (see Table 1). In fact, the prohibition on high-pressure

two-component spray foam is already in effect in 3 states (California, Washington, New Jersey). The proposed 2022 date will delay the implementation of the rules by 1-2 years compared to other states and compared to the dates established by Act 65 (2019). Most U.S. manufacturers, including Dupont and Owens Corning, also supply the Canadian market and thus are required to comply with even stricter regulations starting in 2021.<sup>1</sup>

*Table 1. Prohibition dates enacted in other states for specific foam applications. Vermont's proposal (first column) delays the date by 1-2 years compared to other states and compared to the dates established by Act 65 (2019).*

	Vermont (proposed)	Vermont (enacted Act 65)	California	Washington	New Jersey	Colorado
High-P spray foam	2022	2021	2020	2020	2020	2021
Low-P spray foam	2022	2021	2021	2021	2021	2021
XPS	2022	2021	2021	2021	2021	2021

In light of these regulations, foam manufacturers have announced that they are on track to provide both the U.S. and Canadian markets with low-GWP alternatives in time to comply with the existing regulations and building codes.<sup>2,3,4</sup> For example, Owens Corning is on track to supply the US and Canadian markets with XPS foams that use a blend of Opteon 1100 (HFO) and HFC-152a (GWP of 78). The product meets all building code requirements.<sup>5</sup>

Codes and standards are used to classify and define the types of foam products that can be used in construction of different buildings. Material standards classify a foam product in one of fourteen *types* based on the product's physical properties (e.g., thermal resistance, flexural strength etc.) Building codes permit the use of specific *types* of product for each building application (e.g., residential, commercial) and set thermal resistance requirements (R-value) for insulation materials. According to the EPS Industry Alliance, there are several insulating materials that meet these requirements including expanded polystyrene (EPS) and "these competing manufacturers are fully capable of meeting the needs of the XPS and RCPS [rigid cellular polystyrene] foam insulation market in the United States."<sup>6</sup>

In addition, several low-GWP foam products are available and widely used in the European market (see Table 2 for some examples), proving that the technical know-how already exists. For example, DuPont

<sup>1</sup> As of January 1, 2021, the manufacture of a plastic foam or a rigid foam product using a foaming agent with a GWP greater than 150 is prohibited. See Ozone-depleting Substances and Halocarbon Alternatives Regulations (SOR/2016-137). Part 4, Section 65.03(1). <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2016-137/page-6.html#docCont>

<sup>2</sup> Dupont's announcement in December 2019: <https://www.dupont.com/news/dupont-on-track-for-styrofoam-hfc-compliance.html>

<sup>3</sup> Dupont's announcement in July 2020: <https://www.businesswire.com/news/home/20200716005048/en/DuPont-Develops-Generation-Styrofoam%E2%84%A2-Brand-Insulation-Reduce>

<sup>4</sup> Comment submitted by Jose M. Canovas, General Manager - North America, XPS Foam, Owens Corning (OC). <https://www.regulations.gov/document?D=EPA-HQ-OAR-2019-0698-0056>

<sup>5</sup> Ibid.

<sup>6</sup> Comment submitted by Walter A. Reiter, III, EPS Industry Alliance (EPS-IA). <https://www.regulations.gov/document?D=EPA-HQ-OAR-2019-0698-0058>

manufactured XPS foam for the European market until 2019 (when it sold the production plants to Ravago) with a GWP of 5, using carbon dioxide as the main blowing agent.<sup>7,8,9</sup>

Table 2. Examples of low-GWP XPS foam products in the European market.

Product	Blowing agent(s)
JACKODUR PLUS <sup>10</sup>	HFO 1234ze (70%), CO2 & co-blowing (30%)
Swisspor XPS Premium Plus 300SF <sup>11</sup>	Ethanol, dimethyl ether (DME), CO2
RAVATHERM™ XPS PLUS 300-SL <sup>12, 13</sup>	HFO 1234ze, ethanol, isobutane
SOPREMA XPS	CO2

For these reasons, we ask that you do not grant a delay and instead finalize a 2021 prohibition date for XPS, low-pressure two-component spray foam, and high-pressure two-component spray foam.

We appreciate the opportunity to comment and we are happy to answer any questions.

Sincerely,

**CHRISTINA THEODORIDI**

*Technical Analyst*

*Climate & Clean Energy and International Programs*

**NATURAL RESOURCES DEFENSE COUNCIL**

1152 15<sup>th</sup> STREET NW  
WASHINGTON, D.C. 20005  
M 347 425 2540  
E ctheodoridi@nrdc.org

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<sup>7</sup> Comment submitted by Josh Livingston, Director, Environmental Health Safety, Atlas Molded Products, Atlas Roofing Corporation. <https://www.regulations.gov/document?D=EPA-HQ-OAR-2019-0698-0055>

<sup>8</sup> <https://www.dupont.com/content/dam/Dupont2.0/Products/Performance-Building-Solutions/literature/291-03425.pdf>

<sup>9</sup> <https://ravagobuildingsolutions.com/uk/en/about-us/>

<sup>10</sup> <https://www.jackon-insulation.com/downloads-service/download/epd-jackodur-plus/>

<sup>11</sup> <http://www.swisspor.com/index.php?section=datasheet&cmd=productPage&id=74>

<sup>12</sup> <https://ravagobuildingsolutions.com/fr/wp-content/uploads/sites/29/2020/02/sds-rbs-fr-fr-ravatherm-xps-plus-300-sl.pdf>

<sup>13</sup> <https://ravagobuildingsolutions.com/uk/en/2719/introducing-ravatherm-xp-x-ultra/>

# ASSOCIATED INDUSTRIES OF VERMONT

REPRESENTING THE VERMONT INDUSTRIAL AND BUSINESS COMMUNITY SINCE 1920

August 6, 2020

Megan O'Toole  
Collin Smythe  
Department of Environmental Conservation  
Office of General Counsel  
1 National Life Drive, Davis 3  
Montpelier, VT 05620-3901

Re: Proposed Rule Regarding Phase-Down of the Use of Hydrofluorocarbons

Dear Ms. O'Toole and Mr. Smythe:

AIV appreciates the opportunity to provide comments on the above referenced proposed rule.

AIV appreciates and supports the changes made during the rulemaking process to address practical and technical issues of concern to manufacturers while preserving the goals and intent of the underlying statute upon which the rule is based.

In that regard, and as discussed during the public hearing on July 30, we would note that a remaining issue of consistency with the underlying statute is the incorporation of 10 VSA §586(b)(3):

*(3) 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.*

AIV appreciates the reference to this provision in §37-302 Exemptions and Special Use Conditions of the proposed rule. However, as currently written, (b), (c), and (d) under the definition of "New" in Subchapter 2 of the proposed rule would appear to be triggered by the utilization of products or equipment exempt under 10 VSA §586(b)(3). We would recommend that these definitions be redrafted to make clear that they are not triggered by the utilization of products or equipment manufactured prior to an applicable effective date of the relevant restrictions.

Again, AIV very much appreciates the opportunity provide these comments and requests made above. Please do not hesitate to contact us with any questions or to otherwise continue discussions.

Sincerely,



William Driscoll  
Vice President

July 31, 2020

Megan O'Toole  
Associate General Counsel

Collin Smythe  
Environmental Analyst

Air Quality and Climate Division  
Department of Environmental Conservation  
Vermont Agency of Natural Resources  
1 National Life Drive, Davis 3  
Montpelier, VT 05620-3901

Submitted via email to: [megan.otoole@vermont.gov](mailto:megan.otoole@vermont.gov) and [collin.smythe@vermont.gov](mailto:collin.smythe@vermont.gov)

RE: Proposed rules regarding phase-down of the use of Hydrofluorocarbons

Dear Ms. O'Toole and Mr. Smythe,

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

As we shared in previous comments, American industry has invested well over \$1 billion domestically and employed more than 700,000 US workers to research, develop and implement alternative solutions to high-GWP HFCs. This includes newly constructed manufacturing hubs in the United States to produce such alternatives. This bill will help drive a transition to the low-GWP solutions and promote US leadership in innovation and manufacturing.

Because of this investment, cost-effective, near drop-in alternatives to HFCs are commercially available today and are ready for widespread adoption. In addition to lower GWP, technologies using environmentally preferable HFC alternatives are often also more energy efficient than traditional systems, and thus lower customer costs and increase competitiveness. Honeywell continues to work with our customers to ensure a smooth transition to these advanced technologies. We strongly support the proposed rule.

There is one area where it can be strengthened, though. The proposed rule would transition several foam end-uses on January 1, 2021, but would delay the transition away from high-GWP

HFCs in three foam-end uses by a year, to January 1, 2022. This delay is unnecessary and we urge Vermont to maintain a January 1, 2021 transition date for polystyrene extruded boardstock and billet (XPS), rigid polyurethane high-pressure two-component spray foam and rigid polyurethane low-pressure two-component spray foam.

The technical support document offers the following reasons for delaying the transition date for these categories:

Industry groups have stated that issues with formulation adjustments, lab/code accreditation testing facilities, and the supply chains have all been exacerbated by the ongoing COVID-19 pandemic. If an extension is not granted for these three foam products the number of construction foam products available in Vermont will apparently be greatly reduced. This lack of supply will lead to higher prices for building insulation materials, which will act as a disincentive for building weatherization efforts. Weatherization projects increase the thermal efficiency of a building and so enable the building to be heated using less energy. In Vermont, this energy for heating is generally from the combustion of fossil fuels or biomass, both of which produce carbon dioxide and other co-pollutants which have negative impacts on the climate as well as on human health. By increasing the cost of weatherization materials and disincentivizing these weatherization projects, reductions in heating demand for these buildings will not occur to the same degree and the potential emissions reductions associated with these non-completed projects will not be realized.<sup>1</sup>

Honeywell disagrees that the supply of construction insulation materials in Vermont would be reduced as a result of a January 1, 2021 transition date and urges Vermont to maintain a January 1, 2021 transition for all foam end-uses. The distribution network in Vermont for these products is the same as for high-GWP products. Mandating the use of products with lower-GWP blowing agents will not reduce the supply of high-performance insulation products in Vermont.

The transition has been underway for XPS, high- and low-pressure spray foam products for several years now. EPA SNAP Rule 20 and 21 were adopted as final in 2015 and 2016, respectively, and even prior to that low-GWP solutions were in development. Today there are many alternatives available, including not-in-kind types of insulation, such as fiberglass and other thermal insulating barriers. Attached to this letter is additional information about the current ample availability of alternatives in these foam end-use categories.

Large foam product manufacturers, like DuPont and Owens Corning, have recently made public statements about their readiness to supply low-GWP foam products as of January 1, 2021 to meet the Canadian prohibition on new foam products containing blowing agents with a GWP greater than 150, and to meet similar U.S. state requirements that come into effect on January 1, 2021.<sup>2</sup>

---

<sup>1</sup> Technical Support Document, pp. 1-2.

<sup>2</sup> See pages 15 and 16 of the attachment.

In fact, Owens Corning (OC) recently filed extensive comments with U.S. EPA opposing the approval of higher-GWP blends for XPS foam products and detailing their investment in low-GWP alternatives.<sup>3</sup> Owens wrote, “Over the past decade, OC has committed extensive resources to serving the market for XPS boardstock and billet with low GWP options, including by investing tens of millions of dollars to bring those products to market in the U.S. and elsewhere by 2021.”<sup>4</sup>

Those companies who have invested in the transition and are prepared to meet the January 1, 2021 transition date should not be penalized, and those who delayed should not be rewarded, with further delay.

In 2015, EPA SNAP Rule 20 had established a January 1, 2021 transition date for XPS. In 2016, EPA SNAP Rule 21 set at January 1, 2020 for high-pressure spray foam and January 1, 2021 for low-pressure spray foam. Manufacturers have had several years to develop, test, and certify new products, and many have (as shown in the attached document).

As to the availability of labs for testing and certification, all labs are currently open and conducting testing. Major labs such as UL, FM and Intertek are being very creative in this pandemic. They are allowing for video witnessing of sample preparation, and sample testing. At this time, labs have no backlog and our customers are reporting no issue with testing.

A January 1, 2021 transition for these three types of foam products will also help Vermont achieve its HFC emission reduction targets – delaying will only increase emissions.

Lastly, the Technical Support Document makes note of the importance of maintaining consistency with other states to provide certainty for industry and to send a market signal to manufacturers to continue the transition to low-GWP alternatives. Delaying the transition for XPS, low- and high-pressure spray foam does not serve those objectives, and in fact achieves just the opposite by introducing non-uniform transition dates across the states that are adopting the SNAP transition dates. California, Washington, New Jersey, and Colorado, in addition to Canada, all currently require the use of low-GWP blowing agents in these three end-uses as of at least January 1, 2021 (January 1, 2020 for high-pressure spray foam in California, Washington, and New Jersey).

In sum, we support the proposed rule and urge Vermont to maintain a January 1, 2021 transition date for blowing agents used in XPS, high- and low-pressure spray foam.

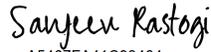
Thank you for the opportunity to express our support for this important proposed rule. We applaud Vermont’s leadership on this issue and look forward to working with you to implement the final rule.

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<sup>3</sup> Owens Corning Comments on EPA SNAP Proposed Rule 23, July 27, 2020 (available at <https://beta.regulations.gov/document/EPA-HQ-OAR-2019-0698-0056>).

<sup>4</sup> Owens Corning comments at 1.

Sincerely,

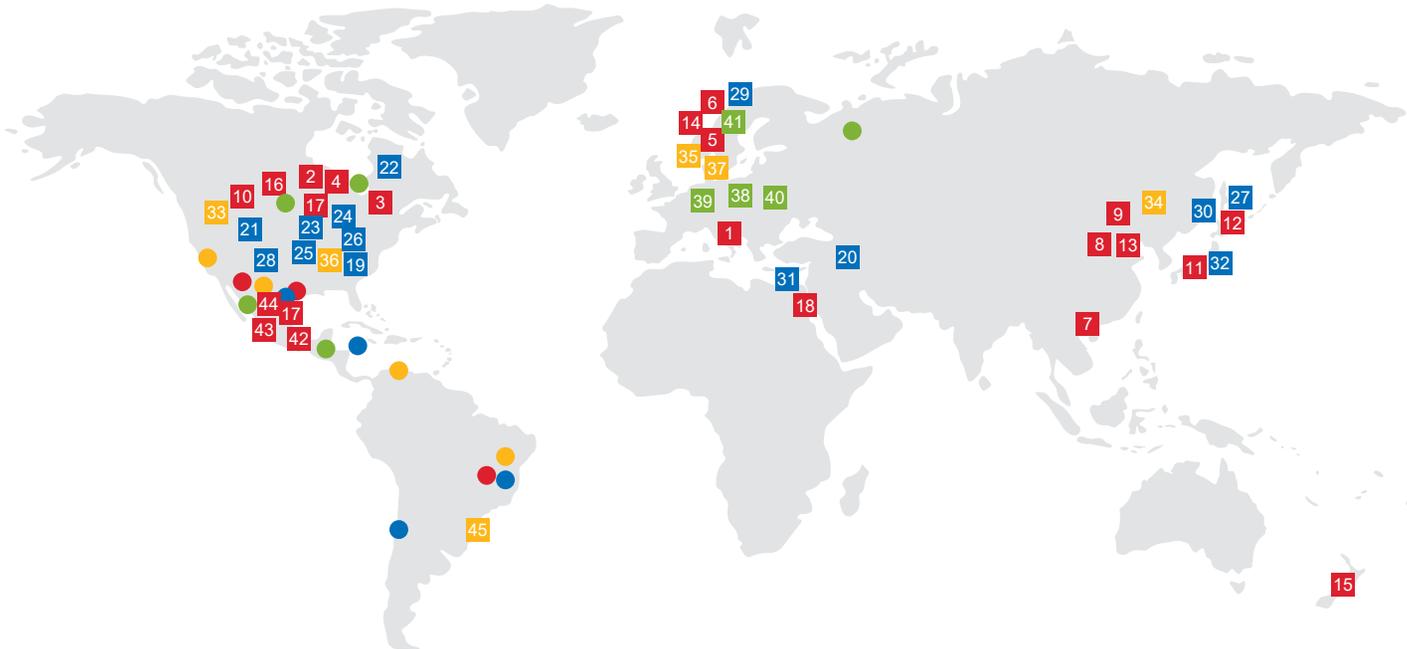
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Sanjeev Rastogi  
Vice President & General Manager  
Honeywell Fluorine Products

# **THERMAL INSULATION PRODUCTS FOR CONSTRUCTION IN VERMONT**

**JULY 2020**

# LOW GWP SOLUTIONS AVAILABLE GLOBALLY



- |   |  |  |
|---|--|--|
| 1 <b>AFINOX</b><br>QUALITY PERFORMANCE INNOVATION | 16 US: Domestic Refrigerator                     | 31 <b>TCI</b><br>HUNTSMAN<br>Polyurethanes                           |
| 2 <b>BASF</b><br>We create chemistry              | 17 <b>Whirlpool</b>                              | 32 <b>NIPPON AQUA</b>  |
| 3 <b>COVESTRO</b>                                 | 18 <b>atlantic</b>                               | 33 <b>AWIP</b><br>ALL WEATHER INSULATED PANELS<br>A Huntsman Company |
| 4 <b>DOW</b>                                      | 19 <b>ACCELLA</b><br>POLYURETHANES               | 34 <b>CIMC</b>   |
| 5 <b>FESTIVO</b>                                  | 20 <b>Bayer Pad</b>                              | 35 <b>Kingspan</b>   |
| 6 Finland: Commercial Freezer OEM                 | 21 <b>DEMILEC</b>                                | 36 <b>mcns</b>   |
| 7 <b>Fisher &amp; Paykel</b>                      | 22 <b>ELASTOCHEM</b><br>Specialty Chemicals Inc. | 37 <b>UNIT45</b>   |
| 8 <b>Haier</b>                                    | 23 <b>ICP</b>                                    | 38 <b>ABRISO</b>   |
| 9 <b>Hisense</b>                                  | 24 <b>Henry</b>                                  | 39 <b>AUSTROTHERM</b><br>Densitrolite                                |
| 10 <b>HOSHIZAKI</b>                               | 25 <b>LAPOLLA</b>                                | 40 <b>fibran</b><br>XPS  |
| 11 Japan: Commercial Appliance                    | 26 <b>NCFI</b><br>POLYURETHANES                  | 41 <b>JACKON</b>   |
| 12 Japan: Commercial Appliance OEM                | 27 <b>Puftem</b>                                 | 42 <b>American Standard</b><br>HEATING & AIR CONDITIONING            |
| 13 <b>Midea</b>                                   | 28 <b>SES</b><br>POLYURETHANES SYSTEMS           | 43 <b>calorex</b>  |
| 14 <b>OSO</b><br>POLYURETHANES                    | 29 <b>Synthesia</b>                              | 44 <b>Imbera</b><br>Panel Coating                                    |
| 15 <b>Rheem</b>                                   | 30 <b>TOYO TIRES</b><br>driven to perform        | 45 <b>flexível</b>   |

## Adoption of Low GWP Foam Blowing Agents Accelerating Worldwide

- Appliance (Domestic and Commercial) 
 ■ Spray 
 ■ Panel 
 ■ XPS
- Ongoing Trials & Evaluations: 
 ● Appliance 
 ● Spray 
 ● Panel 
 ● XPS

# High Pressure Spray Foam

# MANUFACTURERS OF LOW GWP HIGH PRESSURE SPRAY FOAM



## Gaco™

NOW PART OF FIRESTONE BUILDING PRODUCTS

### GacoOnePass Low GWP

#### Closed Cell Foam

A new generation of GacoOnePass – the same excellent performance with enhanced sustainability.

GacoOnePass Low GWP closed cell foam is manufactured with zero ozone-depleting chemicals. It contains polyols derived from naturally renewable oils, postconsumer recycled plastics, and pre-consumer recycled materials. GacoOnePass Low GWP also contains a new blowing agent that can contribute to decreased environmental risk due to its low Global Warming Potential (GWP) and reduced carbon footprint.

GacoOnePass Low GWP achieves zero ozone-depletion and low GWP characteristics all in one.

**Gaco Supplies Vermont Market with Low GWP Spray Foam**

# MANUFACTURERS OF LOW GWP HIGH PRESSURE SPRAY FOAM



**SealTite CC+**

**SealTite Pro One Zero**

**HFO Closed Cell; regular  
& winter**



## **CC NATURAL-THERM® 2.0 HFO**

The CC Natural-Therm® 2.0 HFO is a spray polyurethane foam applied with homeowners and the environment in mind. This product is a smart choice for greater payback with its energy efficient qualities by maintaining air control and reducing the loss of cool or hot air through insulation.

- The CC Natural-Therm® 2.0 HFO is fungi resistant and thermal resistance with a high R-value and low VOC
- It is a closed cell with a density at 2.0 PCF, R-value 7.1/in at 1", and R-value 7.4/in at 4" making it a great choice of spray foam for reducing energy costs and creating zero ozone depletion

**Carlisle Supplies Vermont Market with Low GWP Spray Foam**

# MANUFACTURERS OF LOW-GWP HIGH PRESSURE SPRAY FOAM



JM Gen IV closed-cell spray polyurethane foam (SPF) is a next generation HFO blown, two-component, medium-density, Class 1 rated, SPF insulation system. JM Gen IV is designed to insulate commercial, residential, and industrial buildings. The HFO technology allows JM Gen IV to be produced with a low Global Warming Potential (GWP) and with an Ozone Depletion Potential (ODP) of zero.



**Johns Manville Supplies Vermont Market with Low GWP Spray Foam**

# MANUFACTURERS OF LOW-GWP HIGH PRESSURE SPRAY FOAM



## Heatlok HFO Pro

### INSULATE WITHOUT DAMAGING THE PLANET

Heatlok HFO Pro is designed as a continuous insulation solution helping protect against air, thermal, water, and vapor; with superior adhesion and compressive strength. Acting as an ultra-low global warming potential blowing agent, Heatlok HFO Pro leverages Honeywell's Solstice® Liquid Blowing Agent technology, which boasts a GWP of 1 (99.9% lower than traditional blowing agents).

Former Companies that  
are now Huntsman  
Building Solutions:



**Huntsman Supplies Vermont Market with Low GWP Spray Foam**

# DISTRIBUTORS OF LOW-GWP SPRAY FOAM IN VERMONT



***America's Insulation  
Experts Since 1979***



## Why Choose Us

We are official authorized distributors of Carlisle™, Gaco™, Johns Manville™, and U.T.C™ Spray Foam insulations. We sell many different brands and formulations of Spray Foam Insulation and Roofing Materials. We are the largest and most qualified distributors of Graco® Spray Foam and Coatings Application Equipment in the northeast. Nestled in the White Mountain region of New Hampshire, Spray Foam Distributors of New England actively services all of the New England states from New Hampshire to Massachusetts, Connecticut, New York, Rhode Island, Vermont, Maine, and beyond.

**Low-GWP Spray Foam Readily Available in VT today**

# HIGH-PRESSURE SPRAY FOAM CONTRACTORS IN VERMONT

ENVIRONMENTAL FOAM OF VERMONT



We offer high-quality Johns Manville Products including JM Corbond™ spray foam and JM SPIDER™ custom insulation system. We also offer Demilec Heatlok HFO and Maxguard Polyurea coating.



Heatlok HFO

For homeowners most concerned about the environmental impact of their closed cell spray foam insulation, Heatlok HFO uses a hydrofluoroolefin compound to offer a global warming potential (GWP) which is 99.9% lower than traditional blowing agents that use hydrofluorocarbon.

**Low-GWP Spray Foam Readily Available in Vermont today**

# OTHER INSULATION MATERIALS AVAILABLE

The Genuine. The Original.



OVERHEAD DOOR CO. OF BURLINGTON

Rigid foam insulation is mainly used for new construction projects, and in our experience, it is a great solution for insulating homes and buildings and maximizing energy efficiency.

There are three types of rigid foam board Overhead Door Co. of Burlington can install in your Burlington area home:

- LGWP**
  - Polyisocyanurate (polyiso): polyisocyanurate rigid board insulation typically comes with reflective foil facing on both sides. This makes it ideal for the attic, as the foil helps your home reflect, rather than absorb the sun's energy.
  - Extruded polystyrene (XPS): extruded polystyrene rigid board panels have smooth, plastic surfaces and are extremely durable.
- LGWP**
  - Expanded polystyrene (EPS): EPS rigid board insulation can be used for both new construction projects and re-insulating.



Kamco Supply Corp. of Boston

WILLISTON, VERMONT

TEL: (802) 858.3730  
 DOOR DEPT: (802) 858.0477  
 HOURS: M-F 6:30 AM - 4:30 PM

<p>LGWP</p> <p>Fiberglass Insulation ▶</p>	<p>LGWP</p> <p>Mineral Wool Insulation ▶</p>	<p>Spray Foam Insulation ▶</p>	<p>Cellulose Insulation ▶</p>
<p>Cellulose Installation Tools ▶</p>	<p>Loosefill Fiberglass Insulation ▶</p>	<p>Crawl Space Vapor Barriers ▶</p>	<p>Polyiso (Foil) Insulation Board ▶</p>
<p>Extruded Rigid Foam (XPS) Insulation ▶</p>	<p>Thermal and Ignition Barriers ▶</p>	<p>Metal Building Insulation ▶</p>	<p>EnergyComplete Insulation &amp; Air Sealing System ▶</p>

Other Insulation Options Available with Low Climate Impact

# Low Pressure Spray Foam

# ICP (HANDI-FOAM) LOW-PRESSURE SPRAY FOAM



**HANDIFOAM<sup>®</sup> SLOW RISE - LOW GWP**

LOW-PRESSURE POUR-IN-PLACE POLYURETHANE FOAM (PIP)

HANDIFOAM<sup>®</sup> CHANNEL FILL LOW-PRESSURE POUR-IN-PLACE POLYURETHANE FOAM (PIP) - LOW GWP

HANDIFOAM<sup>®</sup> FIREBLOCK WEST LOW-PRESSURE ONE-COMPONENT POLYURETHANE FOAM SEALANT (OCF)

**ICP Adhesives & Sealants – First to Launch Low-Pressure SPF Kits Featuring Solstice<sup>®</sup> Gas Blowing Agent**

New Handi-Foam<sup>®</sup> High Density Kits Deliver Convenience and Performance for Roof Repairs and More

**ICP Supplies Industry through on-line sales and distribution  
Products Readily Available in Vermont**



Kamco Supply Corp. of Boston



**ICP in the Process of Converting Entire Product Line to LGWP Blowing Agents**

# ICP (HANDI-FOAM) LOW-PRESSURE SPRAY FOAM

Product	Type	LGWP	Conversion in Progress
Handifoam AFS	Low pressure OCF Adhesive	X	
Handifoam black	Low pressure OCF Sealant		X
Handifoam Channel EF	Low pressure pour- in - place	X	
Handifoam commercial vehicle	Low pressure spray foam		X
Handifoam cylinder foam	Low pressure OCF Sealant		X
Handifoam E 84 Class 1(A)	Low pressure spray foam		X
Handifoam E 84 II- 16	Low pressure spray foam		X
Handifoam Extreme	Low pressure OCF Sealant	X	
Handifoam Fireblock West	Low pressure OCF Sealant	X	
Handifoam High Density	Low pressure spray foam	X	
Handifoam HVLP- LD 0.5	Low pressure spray foam	X	
Handifoam HVLP- MD 2.0	Low pressure spray foam	X	
Handifoam liner adhesive 532	Low pressure spray foam	X	
Handifoam low density	Low pressure spray foam		X
Handifoam Straw	Low pressure OCF Sealant	X	
Handifoam Gun	Low pressure OCF Sealant	X	
Handifoam Pro Adhesive	Low pressure OCF Sealant	X	
Handifoam Slow Rise	Low pressure pour- in - place	X	
Handifoam Wall Seal	Low pressure pour- in - place	X	
Handifoam Window and Door	Low pressure pour- in - place	X	
Silent -Seal VCF Mine Ventilation air sealant	Low pressure pour- in - place	X	

- 15 of 21 products use low-GWP solutions.
- Remaining 6 products in process of being converted

**Manufacturers Aggressively Converting to Low-GWP Solutions**

# ALTERNATIVES TO LOW PRESSURE SPRAY FOAM



5 Applications  
Where Low-Pressure Foam  
is Best

## Application

- 1) Basement and room insulation
- 2) Crawl space
- 3) Rim Joist (Band joist)
- 4) Wall and floor penetration
- 5) Attic knee wall

## Other Common Applications

- 1) Crack filling
- 2) Air sealing

## Alternative Insulation Materials

High pressure spray form, fiberglass, cellulose, EPS  
High pressure spray form, fiberglass, EPS  
Fiberglass  
Fiberglass, caulk  
High Pressure spray foam, fiberglass, cellulose

## Alternative Insulation Materials

Caulk, fiberglass, elastomeric sealers  
Caulk, fiberglass

**Alternative Insulation Technologies Well Established**

**XPS**

DuPont on track for Styrofoam™ HFC compliance as environmental regulations come into effect; no product impact expected

Press Release | December 6, 2019

Rooted in sustainable technology and innovation, DuPont reaffirms commitment to leading with environmentally compliant products and building solutions that support global sustainability

**WILMINGTON, Del., Dec. 6, 2019** – Underscoring the importance of delivering essential and environmentally safe innovations to help societies thrive, DuPont (NYSE: DD) confirms its ongoing commitment to leading with solutions that address global sustainability challenges, without compromising product quality or regional supply. With significant investment already underway, DuPont™ Styrofoam™ Brand XPS Insulation will be fully compliant with the various state adoptions of the [Significant New Alternatives Policy \(SNAP\) Program](#) in the United States and Canadian Environmental Protection Act in Canada, as regulations come into effect in 2021. Further delivering on the company's mission to protecting and empowering people and the planet, DuPont is committed to creating long-term value for customers, as set forth in our [2030 Sustainability Goals](#).

**DuPont Confirmed Readiness to Meet State Regs in Dec. 2019**

# DUPONT

## DuPont Develops the Next Generation of Styrofoam™ Brand Insulation to Reduce Greenhouse (GHG) Emissions and Advance 2030 Sustainability Goals

*Building on a history of sustainable technology and innovation, DuPont grows the Styrofoam™ Brand Insulation product line to support modern, high performance building design and advance its commitment to GHG reductions by 2030*

July 16, 2020 09:00 AM Eastern Daylight Time

WILMINGTON, Del.--(BUSINESS WIRE)--In support of its commitment to reduce greenhouse gas (GHG) emissions while driving sustainable innovation, DuPont™ (NYSE: DD) has announced the phased launch of a new, reduced global warming potential (GWP) Styrofoam™ Brand Insulation. Beginning January 1, 2021, the Styrofoam™ Brand Insulation family of products will include lower GWP options, advancing [DuPont's 2030 Sustainability Goals](#) and complying with adopted and upcoming state and provincial hydrofluorocarbon (HFC) regulations throughout the United States and Canada. Building on the company's previous [announcement](#), the multi-phased approach will deliver GHG reductions in support of the Paris Climate Agreement along a timeline that is more aggressive than the Kigali Amendment to the Montreal Protocol.

"The new, reduced GWP product will first launch in Canada and U.S. states that have adopted 2021 HFC regulations as of April 1, 2020, with plans to expand the product offering going forward."

 [Tweet this](#)

**Styrofoam Available to Meet 2021 Canadian <150GWP Regulations**

# OWENS CORNING



**Foamular XPS Available to Meet Canadian <150 GWP Regulations**

# BELOW GRADE APPLICATIONS



## SPFA-153

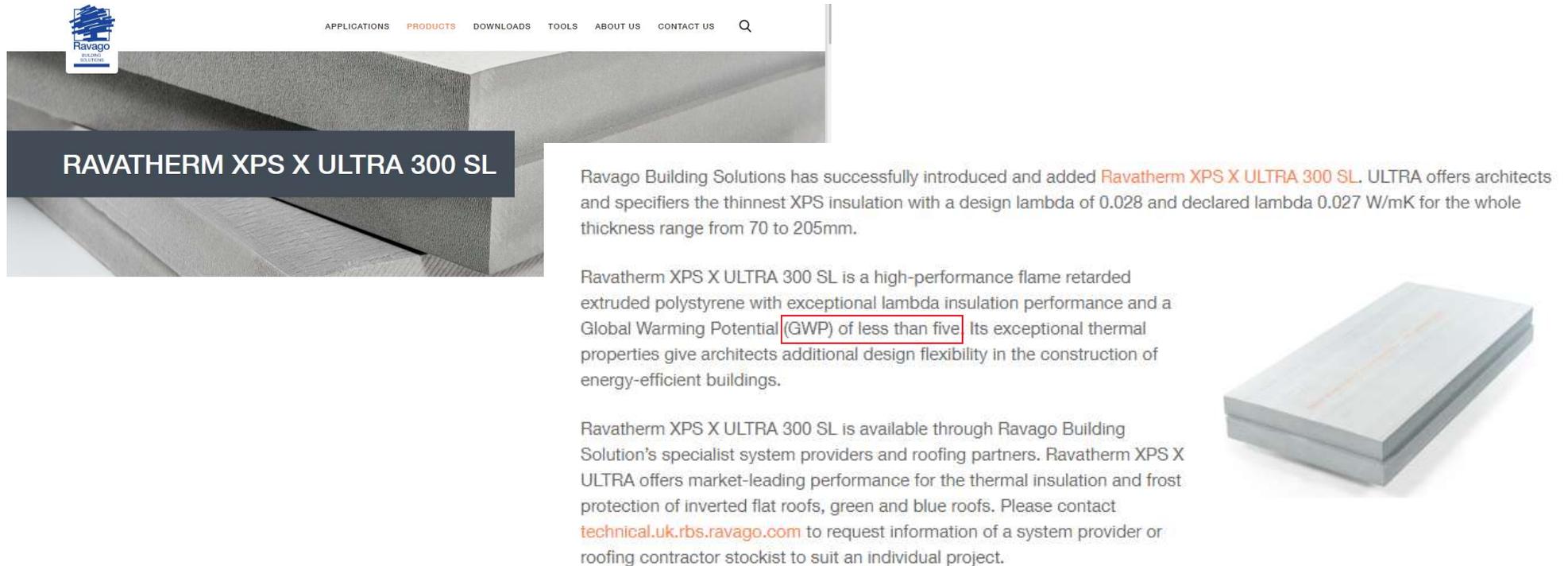
Spray Polyurethane Foam  
Insulation Below Concrete Slabs

### USING ccSPF vs OTHER INSULATION SYSTEMS

Closed-cell rigid foam board and SPF products are generally recommended for all below-grade installations where bulk water may contact the installation. Closed-cell SPF can generally be used in any location indicated as appropriate for rigid foam board, even if ccSPF is not specifically included as an option. Insulation materials that either easily absorb water or are air-permeable are typically not recommended for below-slab installation.

**Alternative Techniques to XPS Exist for Below Grade Applications**

# RAVAGO (FORMERLY DOW EUROPE) LGWP XPS



RAVATHERM XPS X ULTRA 300 SL

Ravago Building Solutions has successfully introduced and added **Ravatherm XPS X ULTRA 300 SL**. ULTRA offers architects and specifiers the thinnest XPS insulation with a design lambda of 0.028 and declared lambda 0.027 W/mK for the whole thickness range from 70 to 205mm.

Ravatherm XPS X ULTRA 300 SL is a high-performance flame retarded extruded polystyrene with exceptional lambda insulation performance and a Global Warming Potential (GWP) of less than five. Its exceptional thermal properties give architects additional design flexibility in the construction of energy-efficient buildings.

Ravatherm XPS X ULTRA 300 SL is available through Ravago Building Solution's specialist system providers and roofing partners. Ravatherm XPS X ULTRA offers market-leading performance for the thermal insulation and frost protection of inverted flat roofs, green and blue roofs. Please contact [technical.uk.rbs.ravago.com](http://technical.uk.rbs.ravago.com) to request information of a system provider or roofing contractor stockist to suit an individual project.

**Another Low GWP XPS Foam Commercially Launched in EU**



August 6, 2020

Air Quality and Climate Division  
Department of Environmental Conservation  
1 National Life Drive – Davis 4  
Montpelier, VT 05620-3704

**Re: Rules regarding phase-down of the use of Hydrofluorocarbons as proposed under Act 65 § 2(a) (2019)**

Dear Department of Environmental Conservation:

Thank you for the opportunity to provide written comments on the Proposed Rules regarding phase-down of the use of Hydrofluorocarbons as proposed under Act 65 § 2(a) (2019). Illinois Tools Works Inc. (ITW) is a U.S. manufacturer of value-added commercial and industrial-use products, components, and systems. ITW is a Fortune 200 company operating a diverse global portfolio of 84 manufacturing divisions, including commercial foodservice refrigeration equipment, among other products.

For the purpose of the proposed regulation, the ITW Food Equipment Group, LLC (ITW FEG) is among the world's largest manufacturers of commercial foodservice refrigeration equipment brands manufactured in the US. ITW FEG has introduced environmentally sustainable marketplace options to promote responsible resource usage, energy savings and overall good stewardship practices, while meeting the needs of the diverse North American commercial kitchen appliance market.

ITW supports the aims of the US Environmental Protection Agency's (EPA) 2015 Significant New Alternatives Policy (SNAP) regulation (Rule 20) that formerly prohibited higher global warming potential substances, such as hydrofluorocarbons (HFCs) from many end-use products, including as refrigerant and foam-blowing agents in commercial foodservice refrigeration equipment. In fact, ITW FEG has re-engineered our impacted products across 500 base models, taking a market leadership position to complete this comprehensive transition ahead of the schedule imposed by Rule 20.

In turn, we have supported U.S. Climate Alliance (USCA) member states in their processes to make similar regulations, and we additionally thank Vermont for furthering the USCA model. From our perspective, we support the proposed rule as an effort to continue supporting manufacturers and the marketplace in reducing the use of HFCs, while the proposed rule also seeks to avoid producing unintended consequences for manufacturers.

**Subchapter 2 – Definitions**

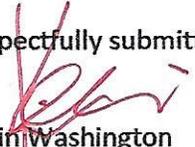
Generally, the definitions applicable to ITW's commercial foodservice equipment include "Retail" or "Commercial Refrigeration Equipment," "Remote Condensing Units," "Stand-alone Unit," and "'Stand-alone' Low- and Medium-temperature" units. These categories and descriptions align with SNAP Rule 20 and are consistent with the end-use settings of our products.

Subchapter 3 – Prohibitions

ITW also supports the effective dates of January 1, 2021, as outlined for commercial stand-alone and remote condensing unit refrigeration equipment for both refrigerant, and 2022 for rigid polyurethane low-pressure, two-component spray foam usage.

In conclusion, we appreciate the Department allowing written comments as you consider the proposed regulation to curb the use of HFCs. We encourage your efforts to continue to engage the broader stakeholder community during the regulatory process and look forward to working with you.

Respectfully submitted,



Kevin Washington  
Government Affairs

Matthew Metz  
54 Bartlett Bay Road  
South Burlington, VT, 05403

Submitted Electronically to: [Collin.smythe@vermont.gov](mailto:Collin.smythe@vermont.gov)

August 2, 2020

Rule Number: 20P016

Title: Rules Regarding Phase Down of the Use of Hydrofluorocarbons

I am pleased to provide the following submission in response to the Vermont Agency of Natural Resources' notice of proposed rulemaking (NPRM) with respect to Rules Regarding Phase Down of the Use of Hydrofluorocarbons (Rule Number 20P016). I grew up in Charlotte, Vermont and am a newly admitted member of the Vermont bar. I graduated in 2019 from the Indiana University Maurer School of Law and the O'Neill School of Public and Environmental Affairs. As a longtime community organizer—including with Tom Steyer's NextGen Climate Action—I strongly believe that swift and comprehensive action is needed to curb the detrimental effects of climate change.

On June 17, 2019, Governor Phil Scott signed into law S.30 (Act 65), “An act relating to the regulation of hydrofluorocarbons (HFCs).”<sup>1</sup> The law indicated that products containing certain HFCs prohibited by the Environmental Protection Agency in now-invalidated rules 20 and 21 of its “Significant New Alternatives Policy” (SNAP) are prohibited in new equipment for certain applications as of the specific dates identified in the Act.<sup>2</sup> Additionally, the legislation required the Vermont Secretary of Natural Resources to file proposed rules no later than July 1, 2020, “to establish a schedule to phase down the use of hydrofluorocarbons to meet the goal of a 40% reduction from the 2013 level of use by 2030.”<sup>3</sup>

Although I applaud Vermont for continuing to be on the forefront on the fight against climate change with this rule, I have two suggestions for improvement: (1) strengthen the enforcement provision; and (2) identify eco-friendly alternatives HFCs in the rule.

If you have any questions with respect to this submission, please do not hesitate to contact me.

Kind Regards,

Matthew Metz  
[Matthewmetz01@gmail.com](mailto:Matthewmetz01@gmail.com)  
(802) 598-0347

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<sup>1</sup> S. J. 190529, at 2081 (Vt. 2019); 2019 Vt. Acts & Resolves 342637.

<sup>2</sup> [http://r744.com/articles/9013/vermont\\_latest\\_state\\_to\\_regulate\\_hfcs](http://r744.com/articles/9013/vermont_latest_state_to_regulate_hfcs). “SNAP was established under Section 612 of the Clean Air Act to identify and evaluate substitutes for ozone-depleting substances. The program looks at overall risks to human health and the environment of existing and new substitutes, publishes lists and promotes the use of acceptable substances, and provides the public with information.” <https://www.epa.gov/snap>. Rules 20 and 21 were invalidated by *Mexichem Fluor, Inc. v. Env'tl. Protection Agency*, No. 17-1703 (D.C. Cir. Oct. 9, 2018) (*Mexichem I*) and *Mexichem Fluor, Inc. v. Env'tl. Protection Agency*, No. 17-1024 (D.C. Cir. Apr. 5, 2019) (*Mexichem II*).

<sup>3</sup> *Supra* note 1.

Matthew Metz  
54 Bartlett Bay Road  
South Burlington, VT, 05403

Submitted Electronically to: [Collin.smythe@vermont.gov](mailto:Collin.smythe@vermont.gov)

August 2, 2020

Rule Number: 20P016

Title: Rules Regarding Phase Down of the Use of Hydrofluorocarbons

I appreciate the opportunity to comment on the Agency of Natural Resources NPRM with respect to Rules Regarding Phase Down of the Use of Hydrofluorocarbons (Rule Number 20P016). I am proud that Vermont continues to be on the forefront of the fight against climate change, and I encourage the state to continue to take bold measures in the future.

Although I agree with the intent and substance of the NPRM, I am concerned that the NPRM does not include adequate provisions through which to enforce the legislature's goal of phasing out HFCs. I also encourage the Vermont Agency of Natural Resources to identify eco-friendly alternatives. Both of these changes should help to boost the compliance rate and save Vermont taxpayers money in the form of fewer enforcement actions.

As such, I submit this NPRM for your consideration. I will discuss three main points. First, the importance of the NPRM in the larger fight against climate change. Second, I will discuss my concern about how the rule would be enforced. Finally, I will discuss the benefits of identifying eco-friendly alternatives to HFCs in the rule.

In this regard, I have the following comments:

#### I. Importance of Addressing Climate Change

Scholars have long recognized the detrimental impact that climate change poses to the Earth and the international challenges of reducing harmful emissions.<sup>4</sup> Climate change is already altering the map of where people can live,<sup>5</sup> threatening food supplies,<sup>6</sup> and reducing the availability of potable water.<sup>7</sup> As the United Nations Intergovernmental Panel on Climate Change has warned, global warming to 1.5°C to 2°C above pre-industrial levels will detrimentally impact, among

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<sup>4</sup> See, e.g., Sebastian Oberthür & Claire Roche Kelly, *EU Leadership in International Climate Policy: Achievements and Challenges*, 43(3) THE INT'L SPECTATOR 35 (2008); Steven Bernstein, *International institutions and the framing of domestic policies: The Kyoto Protocol and Canada's response to climate change*, 35(2) POLICY SCI. 203 (2002).

<sup>5</sup> Dina Ionesco, Daria Mokhnacheva & François Gemenne, *The Atlas of Environmental Migration* (Routledge, 1st ed. 2016).

<sup>6</sup> *Climate Impacts Food Security*, WORLD FOOD PROGRAMME, <https://www.wfp.org/climate-change/climate-impacts> (last visited Mar. 30, 2019).

<sup>7</sup> *Migration and Water*, ENVTL. MIGRATION PORTAL, <https://environmentalmigration.iom.int/migration-and-water> (last visited Mar. 30, 2019).

many other ramifications, the world's forests, rising sea levels, and it will increase the number of heat-related illnesses.<sup>8</sup>

Despite the unambiguous science, taking meaningful action at the international scale largely presents a collective action problem.<sup>9</sup> Within the United States, the current presidential administration has not been taking climate change seriously. President Trump for example, is pulling the United States out of the Paris Climate Agreement,<sup>10</sup> and his administration is in the process of rolling back 100 environmental rules.<sup>11</sup> Moreover, the President has more explicitly addressed his doubt about the threat of climate change on numerous occasions, including calling it a Chinese hoax and warning Americans not to listen to “perennial prophets of doom.”<sup>12</sup>

Perhaps recognizing the lack of leadership on the federal level, many states have stepped up to address this important policy. Vermont, notably, is a leader on addressing climate change, as evidenced for example, by its participation in the Regional Greenhouse Gas Initiative,<sup>13</sup> and its detailed laws on the environment and global warming, located in Title 10 of the Vermont Code.<sup>14</sup> This HFC law and NPRM further solidify Vermont's place at the forefront of fight against climate change in the United States.

At least one member of the Vermont legislature has argued that due to the state's small size taking bold measures to address climate change will not have a measurable impact.<sup>15</sup> This line of reasoning is defeatist and not supported by the data and the science. Individuals who hold this view are misguided for at least two reasons. First, although subscribers of this view are correct that Vermont accounts for only a fraction of greenhouse gas emissions in the United States, the state's per capita greenhouse gas emissions are higher than other New England state, as well as

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<sup>8</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5°C: AN IPCC SPECIAL REPORT ON THE IMPACTS OF GLOBAL WARMING OF 1.5°C ABOVE PRE-INDUSTRIAL LEVELS AND RELATED GLOBAL GREENHOUSE GAS EMISSION PATHWAYS, IN THE CONTEXT OF STRENGTHENING THE GLOBAL RESPONSE TO THE THREAT OF CLIMATE CHANGE, SUSTAINABLE DEVELOPMENT, AND EFFORTS TO ERADICATE POVERTY (Valérie Masson-Delmotte, et. al. eds, 2019); see also Alan Buis, *A Degree of Concern: Why Global Temperature Matters*, NASA (June 19, 2010), <https://climate.nasa.gov/news/2878/a-degree-of-concern-why-global-temperatures-matter/>.

<sup>9</sup> Lisa Schenck, *Climate Change “Crisis” –Struggling for Worldwide Collective Action*, 19 COLO. J. OF INT’L ENVTL POL’Y 319 (2008).

<sup>10</sup> See e.g., Rebecca Hersher, *U.S. Formally Begins to Leave the Paris Climate Agreement*, NPR (Nov. 4, 2019 3:46 PM), <https://www.npr.org/2019/11/04/773474657/u-s-formally-begins-to-leave-the-paris-climate-agreement>.

<sup>11</sup> Nadja Popovich et al., *The Trump Administration Is Reversing 100 Environmental Rules. Here’s the Full List*, NEW YORK TIMES (July 10, 2020), <https://www.nytimes.com/interactive/2020/climate/trump-environment-rollbacks.html>.

<sup>12</sup> Helier Cheung, *What does Trump actually believe on climate change?*, BBC News (Jan. 23, 2020), <https://www.bbc.com/news/world-us-canada-51213003>.

<sup>13</sup> *Regional Greenhouse Gas Initiative*, Agency of Natural Resources, Department of Environmental Conservation, <https://dec.vermont.gov/air-quality/climate-change/rggi>. (last visited July 12, 2020).

<sup>14</sup> 10 V.S.A. §§ 574 (ozone-depleting products), 578 (greenhouse gas reduction goals), 580 (the “25 by 25” goal), 582 (greenhouse gas inventories and registries), and 586 (Hydrofluorocarbons) provide just a few examples.

<sup>15</sup> See e.g., Xander Landem *Vermont Senate approves Global Warming Solutions Act*, VTDigger (June 25, 2020), <https://vtdigger.org/2020/06/25/vermont-senate-approves-global-warming-solutions-act/>. (Noting Senator Joe Benning’s position in the debate on the Global Warming Solutions Act: “We are a very small state, and a very small group of people, and if every one of us was to disappear from the planet today, Vermont’s environment might look a little better, but the reality is we will have absolutely no measurable effect on global warming.”).

the state of New York.<sup>16</sup> Thus, it is important that Vermont take bold steps such as Act 65 to lower its per capita greenhouse gas emissions. Second, the nature of the pollutant in this case, HFCs, are devastating to the environment. In brief, HFCs are “super greenhouse gases, manufactured for use in refrigeration, air conditioning, foam blowing, aerosols, and fire protection solvents.”<sup>17</sup> They were developed as an alternative to ozone-depleting substances that were phased out under the Montreal Protocol.<sup>18</sup> “HFCs have a global warming potential of 1000 to 3000 times that of CO<sub>2</sub>, and their use has increased from almost nothing in 1990 to 1,100 million tonnes of CO<sub>2</sub>e in 2010.”<sup>19</sup> Although these pollutants currently account for roughly 3% of emissions in developed countries, HFC emissions will likely rise to between 7% to 19% of all greenhouse gas emissions by 2050.<sup>20</sup> Given the severity of the harm and the alarming projections, it is commendable that Vermont has acted to reduce HFC usage. This NPRM is crucial to ensuring Act 65’s purpose is achieved.

## II. Clarify the Agency of Natural Resource’s Enforcement Power.

Although the rule is well aligned with Act 65’s text and spirit, the rule is unclear on how it will be enforced. The rule appropriately calls for sweeping changes that will impact businesses across the state. The Vermont Agency of Natural Resources will likely not be able to monitor all businesses at all times, which means that there could be entities that avoid compliance.

The legislature may not have included penalty provisions in the Act or required detailed enforcement provisions to be included in the rule because it deemed that the enforcement powers in the Vermont Code may be sufficient to ensure compliance. As HFCs are an air pollutant, they fall under 10 V.S.A Chapter 23. Within this chapter, 10 V.S.A. § 557, grants the Secretary of the Agency of Natural Resources the power to inspect premises at which air contaminant sources are located in order to ensure compliance with Vermont law. Additionally, 10 V.S.A. § 568 establishes penalties for noncompliance with Chapter 23. Specifically, 10 V.S.A. § 568(a) creates a fine of up to \$100,000 and permits imprisonment up to five years for individuals who do not comply with the Vermont’s air pollution laws. The statutory subsection also notes that “continuing violations” may be considered separate and distinct offenses for the purposes of the statute. Additionally, 10 V.S.A. § 568(b) sets a fine of up to \$50,000 and a possible prison sentence of up to one year for any person who knowingly makes a false statement in a document that is required to be submitted under the chapter.

These penalties are quite substantial and reveal that the Agency of Natural Resources does have the power to enforce this new regulation. Even though it has the power to enforce the regulation, the Agency should consider clarifying its enforcement power in the regulatory text. As the regulation is currently written, Section 37-105 briefly discusses enforcement, but it does not

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<sup>16</sup> VERMONT AGENCY OF NATURAL RESOURCES, AIR CLIMATE AND QUALITY DIVISION, VERMONT GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST: BRIEF 1990-2016 (Jan. 2020).

<sup>17</sup> Environmental Investigation Agency, *What Are Hydrofluorocarbons?*, EIA, <https://eia-global.org/campaigns/Climate/what-are-hydrofluorocarbons>. (last visited July 19, 2020).

<sup>18</sup> *Id.*; see also U.N. Environment Programme, *The Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Environment Programme, <https://ozone.unep.org/treaties/montreal-protocol/montreal-protocol-substances-deplete-ozone-layer>. (last visited July 12, 2020).

<sup>19</sup> Environmental Investigation Agency, *supra* note 17.

<sup>20</sup> *Id.*

mention either of the statutes mentioned above. Even though individuals and organizations should take on the individual responsibility of understanding the law, not everyone is well versed in the law or in legal research. To make the law more accessible to the regulated public, the Agency of Natural Resources should amend section 37-105 by adding the following new paragraphs at the end of provision:

The Secretary of Natural Resources, or his or her designee, is authorized to inspect any property, premise, or place where a product governed by this rule is installed or sold pursuant to 10 V.S.A. § 557.

Any person who knowingly violates or fails to comply with this rule shall be fined not more than \$100,000 or be imprisoned for no more than five years, or both, pursuant to 10 V.S.A. § 568(a). Any person who knowingly makes a false representation, statement, or certification under this rule as described in 10 V.S.A. § 568(b) shall be subject to a fine of no more than \$50,000 or up to one-year imprisonment, or both.

By clarifying the penalties for non-compliance within in the regulatory text in this way, the Agency of Natural Resources should see compliance rates increase because more people will be aware of the consequences for failing to abide by the rule. In turn, increased compliance should save the taxpayers money in enforcement investigations and actions, as more people will be equipped with the knowledge needed to ensure that they are acting lawfully.

### III. The rulemaking should identify alternatives to HFCs.

Section 1(c)(3) of Act 65 authorizes the Secretary of the Agency of Natural Resources, among other powers, to develop a list of substitutes to HFCs that reduce the overall risk to human health and the environment. Consistent with the statute, the NPRM should be amended to create a list of alternatives to HFCs to which the affected public can turn once the phase-outs have been implemented.

Researchers around the globe have identified a range of products that can be used as alternatives to HFCs and that are environmentally friendlier. As the Environmental Investigations Agency (EIA) has noted, for example, climate-friendly alternatives include hydro carbons, ammonia (R-717), water, and Carbon Dioxide (CO<sub>2</sub> or R-744).<sup>21</sup> The EIA also notes that eco-friendly alternatives to refrigerants include isobutane (R-600a) propylene (R-1270), and “not-in-kind alternatives, such as solar.”<sup>22</sup> The European Union has identified a numerous other alternatives, including, to name just two examples, propane (R290) and propene (R1270).<sup>23</sup>

The present NPRM does an excellent job detailing the phase-out deadlines for HFC usage, but it does not identify alternatives that could be used after phase-outs are in effect. It is important to convey this information in order to give Vermonters time to plan how to adjust their behaviors.

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<sup>21</sup> See *supra* note 17.

<sup>22</sup> *Id.*

<sup>23</sup> *Climate-friendly alternatives to HFCs*, European Union: Climate Action, [https://ec.europa.eu/clima/policies/f-gas/alternatives\\_en](https://ec.europa.eu/clima/policies/f-gas/alternatives_en). (last visited July 17, 2020).

Although it is possible that the Agency of Natural Resources may still be planning a public information campaign to identify alternatives, the Agency should amend the NPRM to note that alternatives are in place. The NPRM could be amended, for example, by adding a subchapter four titled “ECO-FRIENDLY ALTERNATIVES TO HYDROFLUROCARBONS,” which would note the range of alternatives available to the environmentally destructive pollutant.

If the Agency is concerned that listing alternatives may raise the perception that the state is inappropriately endorsing particular alternatives or sectors, it could consider adding some language like the following disclaimer in this new subsection:

The Agency of Natural Resources is providing the below, non-exhaustive, information on eco-friendly alternatives to HFCs for the public’s reference and convenience. The Agency of Natural Resources and the Vermont state government do not endorse any of the alternatives listed below.<sup>24</sup>

Ultimately, however, any claim that including alternatives in the NPRM would be inappropriate endorsement does not have a basis in the Vermont statutes. 10 V.S.A. § 554 details the powers that the Secretary of the Agency of Natural Resources has in order to implement the Vermont Conde’s policy promoting good air quality.<sup>25</sup> Specifically, 10 V.S.A. 554(5) authorizes the Secretary to “[p]repare and develop a comprehensive plan or plans for the prevention, abatement, and control of air pollution in [Vermont].” Moreover, 10 V.S.A. § 554(8) authorizes the Secretary to “[e]ncourage and conduct studies, investigations, and research relating to air contamination and air pollution and their causes, effects, prevention, abatement, and control.” Finally, 10 V.S.A. § 554(12) authorizes the Secretary to “[c]ollect and disseminate information and conduct educational and training programs relating to air contamination and pollution.”

Considering these three powers together (and noting the other powers authorized by statute), the Secretary is not only authorized to support the identification and promotion of eco-friendly solutions, but is actually encouraged to do so. If the Agency chooses not to exercise its power in this NPRM, I encourage it to follow up the NPRM with a public engagement campaign targeted at educating the public about eco-friendly alternatives to HFCs. In this way, the Agency would be paving the way to increased compliance with the regulation, as affected persons and entities would be made aware of a range of alternatives to which they could turn in order to ensure continued economic prosperity in the face of a changing legal landscape. As noted above, the increased public awareness should help to ensure greater compliance with the rule, which in turn could end up saving the taxpayers money in the form of fewer costly enforcement actions.

IV. **Recommendation: The Agency of Natural Resources should move forward with the NPRM because it is a vital step in combatting global warming, but the Agency**

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<sup>24</sup> I cannot find any article or website that mentions a concern about inappropriate endorsements of alternatives, but I mention the language proposed here because it is generally important for the government to actually be and appear to be neutral when it comes to endorsements. Given that the Secretary of the Agency of Natural Resources is empowered to “[p]repare and develop a comprehensive plan or plans for the prevention, abatement, and control of air pollution in [Vermont],” the Secretary does seem to have the power to recommend specific alternatives to HFCs in the interest of effectuating the policy of promoting good air quality. 10 V.S.A. § 554(5).

<sup>25</sup> 10 V.S.A. § 551.

**should clarify how the regulation will be enforced and identify eco-friendly alternatives to HFCs.**

In closing, I am in strong support of the NPRM, which keeps Vermont on the forefront of the fight against climate change and is consistent with the text and the spirit of Act 65. Moreover, the rule will help Vermont address the fact that it has the highest level of greenhouse gas pollution per capita among New England states and New York.

Although the rule is strong, it could be improved in two ways. First, the Agency of Natural Resources should consider changing Section 37-105 to clarify that the Agency has the power to enforce the rule and highlight the penalties that individuals and organizations will face in the event of noncompliance. Second, the Agency should consider amending the rulemaking to identify the plentiful and more eco-friendly alternatives to help Vermonters more easily transition to a world with reduced HFC usage. As explained above, these changes should help facilitate with increased compliance, which could ultimately lead to a reduced number of State enforcement actions, thereby saving the taxpayer dollars.

I thank you for your consideration of these comments and appreciate your time. I would be happy to discuss the comments further during your deliberations.

*Submitted via Electronic Mail*

July 28, 2020

Air Quality and Climate Division  
Vermont Department of Environmental Conservation  
1 National Life Drive, Davis 3  
Montpelier, Vermont 05620  
[megan.otoole@vermont.gov](mailto:megan.otoole@vermont.gov)  
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**Re: Proposed Rule: Rules Regarding Phase-Down of the Use of Hydrofluorocarbons**

Dear Air Quality and Climate Division Staff:

The Polyisocyanurate Insulation Manufacturers Association<sup>1</sup> (“PIMA”) appreciates the opportunity to comment on the Vermont Department of Environmental Conservation’s (“Department”) proposed rule version of Rules Regarding Phase-Down of the Use of Hydrofluorocarbons (“HFC Phase-down Rule”). The comments below focus on the HFC Phase-down Rule’s requirements for the foams end-use category.

**1. PIMA supports the purpose and applicability provisions of the HFC Phase-down Rule.**

PIMA supports the purpose of the HFC Phase-down Rule as described in Section 37-102 as well as the applicability provisions of Section 37-103. Furthermore, we support the Department’s decision to promulgate rules that do not include requirements for recordkeeping and disclosure, especially as applicable to end-uses like polyisocyanurate insulation where the prohibited HFC substitutes are not used. Recordkeeping and disclosure requirements unnecessarily burden manufacturers without providing any benefit to the public or regulatory enforcement efforts. Therefore, we reiterate our support for the Department’s HFC Phase-down Rule as proposed.

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<sup>1</sup> More information available at [www.polyiso.org](http://www.polyiso.org).

## **2. PIMA supports the prohibitions in Section 37-301 of the HFC Phase-down Rule as applicable to the foams end-use category.**

Specially, PIMA supports the use restrictions for polyisocyanurate insulation products (“Foams; Rigid Polyurethane and Polyisocyanurate Laminated Boardstock”). PIMA also supports the prohibition date of January 1, 2021 for this end-use category.

Importantly, the HFC Phase-down Rule establishes a uniform playing field for products within the foams end-use category as it relates to the use restrictions for high-global warming potential (GWP) HFC substitutes and blends thereof. This level playing is especially important for the building foam insulation product sector in which many products are in direct competition with one another. This sector includes products such as polyisocyanurate insulation boardstock, spray polyurethane foam insulation, and expanded (EPS) and extruded (XPS) polystyrene insulation boardstock. Low-GWP substitutes are commercially available and viable for all products in the building foam insulation sector, and the proposed rule creates a uniform transition to more sustainable solutions for this sector. If finalized as drafted, the Department's HFC Phase-down Rule will ensure no manufacturer or foam insulation product type receives a competitive advantage due to unequal use restrictions for HFCs and blends thereof.

With respect to the effective dates for the use prohibitions for the foams end-use category, we note that the effective dates do vary between January 1, 2021 or January 1, 2022. The additional year for end-uses such as polystyrene extruded boardstock is a departure from the effective date of January 1, 2021 established by other jurisdictions. Establishing January 1, 2021 as the effective date for all use prohibitions applicable to the foams end-use category will only establish more parity between the specific product categories.

In summary, we strongly urge the Department to maintain the proposed use restrictions for the foams end-use category in the final rule, and to reject any modifications that would permit the continued use of high-GWP substitutes and blends thereof for specific foam end-uses beyond the proposed effective date(s) (with the exception of the military, space, and aeronautics exemptions included in Section 37-302).

## **3. About PIMA**

PIMA represents North American manufacturers of laminated polyisocyanurate insulation board products. 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 polyisocyanurate insulation produced and sold in North America, including Vermont.

#### 4. Questions

PIMA appreciates the opportunity to comment on the proposed rule version of the HFC Phase-down Rule. Please contact me at [jkoscher@pima.org](mailto:jkoscher@pima.org) or (703) 224-2289 should additional information be helpful to your deliberative regulatory process.

Respectfully submitted,



Justin Koscher  
President

August 3, 2020

State of Vermont  
Department of Environmental Conservation  
Office of General Counsel  
1 National Life Drive, Davis 3  
Montpelier, VT 05620-3901  
Via email [megan.otoole@vermont.gov](mailto:megan.otoole@vermont.gov) and [collin.smythe@vermont.gov](mailto:collin.smythe@vermont.gov)

Re: Vermont draft HFC Rulemaking

Dear Department Staff:

The undersigned companies who are producers and suppliers of hydrofluorocarbons (HFCs) and the next generation of low global warming potential (GWP) solutions, as well as manufacturers of construction insulation foams and foam systems wrote to you previously on May 5<sup>th</sup>.

All of us support the Vermont draft regulation as it reads today. We also continue to support Vermont's goals to reduce greenhouse gas (GHG) emissions, including those of HFCs. The products we make help advance that goal by significantly reducing the amount of energy used to heat and cool residential, commercial and industrial buildings.

As previously noted, while we have invested heavily, and continue to invest in the substitutes for high global warming potential HFCs, we are very concerned about a small subset of applications where a large portion of the regulated community will not be able to meet proposed HFC ban dates of 1/1/21. We thank Vermont for acknowledging our modest extension, to 1/1/22, of the effective HFC ban date for the following 3 distinct construction foam products in the draft regulation:

- XPS Boardstock and Billet
- Low Pressure two Component Polyurethane Spray Foam
- High Pressure two Component Polyurethane Spray Foam

Keeping the 1/1/22 date in the final Vermont rule is critical to our industry.

Additionally, we appreciate the recognition by Vermont on the need for coordinating its regulation with the other US Climate Alliance states and support the sell-through provision in the draft regulation.

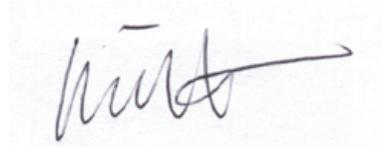
We are ready to meet with you or your staff to answer any questions or provide further details.

Please reach out to any of the undersigned.

Sincerely,



Arkema Inc.  
Allen Karpman  
Director, Government Affairs, Fluorochemicals  
[allen.karpman@arkema.com](mailto:allen.karpman@arkema.com)



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