

ADDENDUM TO:

CONSULTATION DOCUMENT
ON
PROPOSED REGULATORY MEASURES ON
HYDROFLUOROCARBONS

Chemical Production Division
Environment Canada
March 2015

TABLE OF CONTENTS

I. PURPOSE	3
II. SUBMISSION OF COMMENTS	4
III. PROPOSED RISK MANAGEMENT	5
A. ELEMENTS OF A PHASE-DOWN	5
i. Baseline	5
ii. Allowance System	5
iii. Phase-down Schedule	6
B. PRODUCT-SPECIFIC CONTROLS	6
i. Aerosols	7
ii. Motor Vehicle Air-Conditioning	8
iii. Stationary Cooling	9
iv. Mobile Refrigeration	11
v. Foams	12
vi. Exemptions	13
IV. PATH FORWARD	13
ANNEX 1: GLOBAL-WARMING POTENTIALS OF HFCS AND BLENDS CONTAINING HFCS	14

I. PURPOSE

This addendum to the [Consultation Document on Proposed Regulatory Measures on HFCs](#) (winter 2015) is a follow-up to the consultations on proposed regulatory measures for hydrofluorocarbons (HFCs) that took place on February 19th, 2015 in Gatineau, Quebec.

This addendum outlines an additional proposal for regulatory measures for HFCs that takes into account comments received at and following the February 19th meeting. This addendum is intended to support and stimulate further discussions during sector-specific consultations taking place in late March 2015.

At the consultation meeting on February 19th, 2015 in Gatineau, Environment Canada proposed two options to regulate HFCs:

- 1) Prohibitions on specific HFCs by specific years in certain sectors; and
- 2) A gradual phase-down of HFCs from a calculated baseline.

A “hybrid” approach combining elements of the two options was also discussed at the meeting.

At the meeting, stakeholders were asked to consider the following questions when formulating their feedback on the proposed options to regulate HFCs:

- What are the advantages and disadvantages of each proposed option?
- Is there a preferred option? Why is that option preferred? Would a combination of both options be desirable?

In general, stakeholders expressed a preference for a phase-down approach and the benefits of a “hybrid” approach also emerged during the discussions. Stakeholders indicated that a phase-down approach would allow market forces to help drive the transition away from HFCs and allow more flexibility in how this is achieved. Some stakeholders were of the view that sector-specific prohibitions would provide well-defined target dates, resulting in predictability for specific industries and applications. Several stakeholders indicated that combining elements of these approaches would provide industry with guidance and direction, as well as the flexibility to allow the development of solutions.

Following the February 19th meeting, Environment Canada considered the comments received since the launch of the regulatory development process through the publication of the Notice of Intent to Regulate HFCs on December 6th, 2014.

An additional proposal for regulatory measures for HFCs that takes the comments received into consideration is put forward in this addendum for further discussion before final pre-publication in Part I of the *Canada Gazette*.

Readers are asked to review the document carefully and provide their feedback in written format, as detailed in the next section.

II. Submission of Comments

Please send your comments on the proposals described in this Consultation Document in writing to either of the following addresses below **no later than April 17, 2015**:

Regular mail:	E-mail:
<p>Manager Ozone Layer Protection and Export Controls Chemical Production Division Environment Canada Place Vincent Massey 351 Blvd St-Joseph, 11th Floor Gatineau, Quebec K1A 0H3</p> <p>Fax: 819-938-4218</p>	<p>OzoneProtectionPrograms@ec.gc.ca</p> <p>Please type “Consultations on Regulatory Measures for HFCs” in the subject line</p>

III. Proposed Risk Management

Environment Canada is considering a “hybrid” approach to regulate HFCs, which would combine a gradual phase-down of bulk virgin HFCs, whether alone or in a mixture, and product-specific controls. The proposal is described in more detail in the following sections.

A. Elements of a Phase-down

i. Baseline

The Canadian baseline would be modeled after the 2015 North American Proposal¹ to phase-down HFCs under the Montreal Protocol. That is, the baseline would be calculated as a percentage of the average HFC consumption and a percentage of the average HCFC consumption from 2011-2013².

Based on the results of the mandatory survey conducted by Environment Canada in 2014, it is estimated that the average HFC consumption over 2011-2013 is 19.39 Million Tonnes CO₂ equivalent. The average HCFC consumption over 2011-2013 is 1.73 Million Tonnes CO₂ equivalent.

DISCUSSION

- *What are the advantages and disadvantages of this approach?*
- *Should another baseline formulation be considered?*
- *If so, what and why?*

ii. Allowance System

As was done for HCFCs, HFC consumption allowances would be distributed pro-rata based on a company’s consumption in the years used in the calculation of the baseline.

Consumption allowances would allow companies to manufacture, import and export bulk virgin HFCs up to their consumption allowance limit, whether the HFCs would be used in original equipment manufacture or for the servicing of existing equipment.

Companies who consumed HCFCs **and/or** HFCs in the years of calculation would be given consumption allowances. Using more recent years in the

¹ Note that at the time of writing of this document, the 2015 North American Proposal was not yet finalized.

² A CEPA section 71 survey may be required to obtain specific consumption data for the 2013 calendar year and beyond.

calculation of the baseline would address concerns raised by stakeholders with respect to companies who began importing HFCs more recently.

Allowances would not be distributed by sector. This would allow for more flexibility in transitioning to alternatives in sectors and sub-sectors where alternatives are available.

DISCUSSION

- *Are there other preferable options that could be considered for the distribution of allowances?*
- *If so, what are they?*

iii. Phase-down Schedule

Reduction steps from the baseline would align with those in the 2015 North American Proposal that is currently being finalized. The 2014 North American Proposal reduction schedule is shown below to illustrate the approach.

Potential Steps for HFC Reduction Schedule	
2018	90%
2023	65%
2029	30%
2035	15%

The phase-down schedule would apply to all bulk virgin HFCs being manufactured, imported or exported.

DISCUSSION

- *What are the key considerations in establishing the reduction schedule?*

B. Product-specific Controls

For all the product-specific controls, Environment Canada is considering control measures established on a global-warming potential (GWP)³ basis rather than by specific HFCs. This approach would be in line with the phase-down components that establish the baseline and consumption allowances on a GWP basis and would provide more flexibility in the selection/transition to alternatives.

³ Environment Canada will use the 100-yr global-warming potentials from the Fourth Assessment Report of the IPCC - https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

Product-specific controls would only apply to the manufacture and import of the products and not to the import of the bulk HFCs, whether alone or in a mixture, for the manufacture of the products. Import of bulk HFCs, whether alone or in a mixture, would be controlled by the consumption allowances and the phase-down.

i. Aerosols

Prohibitions would include:

- the import and manufacture of aerosol products that contain:
 - an HFC with a GWP > 150, by 1 January 2017⁴; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2017⁴.

The following exemptions will apply to the aforementioned prohibitions:

- metered-dose inhalers (MDIs) for the treatment asthma, chronic obstructive pulmonary disease, allergic rhinitis and other diseases where aerosols can be used for systemic delivery through lung, nose, or other organs;
- wound care sprays;
- topical coolant sprays for pain alleviation;
- products for removing bandage adhesives from skin;
- cleaning products for removal of grease, flux and other soils from electrical equipment or electronics;
- lubricants for electrical equipment or electronics;
- sprays for aircraft maintenance;
- pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides;
- mold release agents;
- lubricants and cleaners for spinnerettes for synthetic fabrics;
- duster sprays specifically for removal of dust from photographic negatives, semiconductor chips and specimens under electron microscopes; and
- document preservation sprays.

⁴ Should the regulatory measures come into force later than 2017, these measures would enter into force at the time the regulatory measures take effect.

DISCUSSION

- Are the proposed GWP limits realistic? *If not, why?*
- Are the proposed dates realistic? *If not, why?*

ii. Motor Vehicle Air-Conditioning

Prohibitions would include:

- the import and manufacture of automobiles, for the model years 2021 and beyond, that contain or are designed to contain:
 - any HFC with a GWP > 150; or
 - a blend that contains any HFC where that blend has a GWP > 150.

Environment Canada will ensure that the definition of automobile aligns with other Canadian legislation for this sector, more specifically with the *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations*, which defines “automobile” as follows:

“*automobile*” means any four-wheeled self-propelled vehicle that is designed for use on highways and that has a gross vehicle weight rating of less than 4 536 kg (10,000 pounds), except:

- (a) a vehicle manufactured in different stages by two or more manufacturers, if no intermediate or final-stage manufacturer of that vehicle manufactures more than 10,000 multistage vehicles per year; and
- (b) a work truck

Including such a definition as part of the proposed regulatory measures would ensure that specialized vehicles, such as armoured vehicles, are excluded from the proposed measures.

The manufacture and import of automobile that contain or are designed to contain certain HFCs destined for export would be allowed.

The import, use and sale of HFCs, whether alone or in a mixture, in bulk for the purpose of servicing of air-conditioning systems in automobiles with a model year that is before the prohibited model year would be allowed.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*

iii. Stationary Cooling

The stationary cooling sector includes domestic, commercial and industrial refrigeration and air-conditioning.

a. Domestic Refrigeration

Prohibitions would include:

- the import and manufacture of domestic refrigeration systems that contain or are designed to contain:
 - any HFC with a GWP > 150, by 1 January 2019; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2019.

Domestic refrigeration systems would include refrigerators and freezers.

The import, use and sale of any HFC, whether alone or in a mixture, in bulk for the servicing of equipment manufactured or imported before the date of prohibition would be allowed for the useful life of the equipment/system.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*

b. Domestic Air-conditioning

Prohibitions would include:

- the import and manufacture of stand-alone air-conditioning systems that contain or are designed to contain:
 - any HFC with a GWP > 750, by 1 January 2023; or
 - a blend that contains any HFC where that blend has a GWP > 750, by 1 January 2023.

Similar to the stand-alone refrigeration systems, a stand-alone air-conditioning system is a self-contained system where the components are integrated within the structure, such as portable room air-conditioning units, window units and through the wall units.

The import, use and sale of any HFC, whether alone or in a mixture, in bulk for the servicing of equipment manufactured or imported before the date of prohibition would be allowed for the useful life of the equipment/system.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*
- *Would it be preferable to define this as domestic air-conditioning units with a charge of 3 kg or less of refrigerant, for example?*

c. Commercial and Industrial Refrigeration

Prohibitions would include:

- the import and manufacture of centralised refrigeration systems that contain or are designed to contain:
 - any HFC with a GWP > 1500, by 1 January 2019; or
 - a blend that contains any HFC where that blend has a GWP > 1500, by 1 January 2019;
- the retrofit of centralised refrigeration systems with:
 - any HFC with a GWP > 2000, by 1 January 2019; or
 - a blend that contains any HFC where that blend has a GWP > 2000, by 1 January 2019;
- the import and manufacture of centralised refrigeration systems that contain or are designed to contain:
 - any HFC with a GWP > 1000, by 1 January 2024; or
 - a blend that contains any HFC where that blend has a GWP > 1000, by 1 January 2024;
- the import and manufacture of stand-alone commercial refrigeration system that contain or are designed to contain:
 - any HFC with a GWP > 150, by 1 January 2019; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2019.

A centralised refrigeration system is a system designed to maintain adequate temperatures for storing food, beverages, and other perishables, and displaying it for sales.

A stand-alone commercial refrigeration system is a self-contained system where the components are integrated within the structure, such as vending machines and reach-in coolers.

Environment Canada would not control systems/equipment designed to cool products to temperatures below -50°C.

The import, use and sale of any HFC, whether alone or in a mixture, in bulk for the servicing of equipment manufactured or imported before the date of prohibition would be allowed for the useful life of the equipment/system.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*
- *Is it necessary to have a delay for retrofit prohibitions?*
- *If so, what would be a reasonable delay?*

d. Commercial Air-conditioning

Prohibitions would include:

- the import and manufacture of commercial air-conditioning systems that contain or are designed to contain:
 - any HFC with a GWP > 750, by 1 January 2023; or
 - a blend that contains any HFC where that blend has a GWP > 750, by 1 January 2023.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*
- *Would it be necessary to include measures on retrofit?*

iv. Mobile Refrigeration

Prohibitions would include:

- the import and manufacture of mobile refrigeration systems that contain or are designed to contain:
 - any HFC with a GWP > 2000, by 1 January 2025; or
 - a blend that contains any HFC where that blend has a GWP > 2000, by 1 January 2025.

Mobile refrigeration systems would include those that are used to cool vessels, intermodal containers, trailers and large trucks, etc.

DISCUSSION

- *Are the proposed GWP limits realistic? If not, why?*
- *Are the proposed dates realistic? If not, why?*

v. Foams

Consideration was given to the length of time needed to transition to alternatives, including the various federal, provincial and municipal Codes and Standards that must be amended.

Prohibitions would include:

- the manufacture and import of high-pressure spray foam products that contain:
 - any HFC with a GWP > 150, by 1 January 2019; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2019.
- the manufacture and import of extruded polystyrene foam products that contain:
 - any HFC with a GWP > 150, by 1 January 2020; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2020.
- the manufacture and import of other foam products that contain:
 - any HFC with a GWP > 150, by 1 January 2022; or
 - a blend that contains any HFC where that blend has a GWP > 150, by 1 January 2022.

DISCUSSION

- *Is this approach detailed enough or is there a need to consider prohibitive measures for each of the sub-sectors that were broken out in the consultation document? That is:*
 - *spray foam applications*
 - *flexible polyurethane*
 - *rigid polyurethane appliance foam*
 - *rigid polyurethane: spray*
 - *rigid polyurethane: commercial refrigeration and sandwich panels*
 - *rigid polyurethane slabstock*
 - *rigid polyurethane and polyisocyanurate laminated boardstock*
 - *integral skin polyurethane*
 - *polystyrene (extruded sheet)*
 - *polystyrene: extruded boardstock and billet*
 - *polyolefin*
 - *phenolic insulation board and bunstock*
- *Or is there a different grouping of the sub-sectors that should be considered?*
- *For example, could the spray foam segment be broken into high-pressure spray foams and low-pressure spray foams?*

vi. **Exemptions**

In addition to specific exemptions that may apply in each of the sectors, Environment Canada is considering an exemption for an essential purpose to all product-specific controls. Provisions for such an exemption are currently included in the *Ozone-depleting Substances Regulations, 1998*. An exemption for an essential purpose would be assessed against the following criteria:

- the product is necessary for health and safety or is critical for the good functioning of society, and
- there are no technically and economically feasible alternatives.

IV. **Path Forward**

In drafting the proposed regulatory measures, Environment Canada will review and take into consideration all comments received from interested and affected parties in response to this addendum and consultation sessions.

Environment Canada may proceed with additional focused consultations to finalize the proposed regulatory measures based on the comments received during the consultations. This would consist of consulting with a small number of interested individuals representing the various stakeholder groups (chemical producer, technology developer, technology user, etc.), who would provide additional information regarding the practical implementation of the proposed regulatory measures.

The proposed regulatory measures will then be published for public comment in Part I of the *Canada Gazette*.

ANNEX 1: Global-Warming Potentials of HFCs and Blends containing HFCs

HFC or blends containing an HFC	GWP
HFC-125	3500
HFC-134a	1430
HFC-152a	124
HFC-227ea	3220
HFC-23	14800
HFC-236fa	9810
HFC-245FA	1030
HFC-32	675
HFC-365mfc	794
HFC-4310mee	1640
R-401A	1182
R-401B	1288
R-402A	2788
R-402B	2416
R-404A	3922
R-407A	2107
R-407C	1774
R-407F	1825
R-408A	3152
R-409A	1585
R-410A	2088
R-417A	2346
R-421A	2631
R-422A	3143
R-422D	2729
R-424A	2440
R-426A	1508
R-427A	2138
R-428A	3607
R-434A	3245
R-437A	1805
R-438A	2264
R-507A	3985
R-508B	13 396
HFC-365mfc/227ea	900-1100