



Our File No. 2023-01-07

August 18, 2023

TO: MR. JERRY DEMARCO

Commissioner of the Environment and Sustainable Development
Office of the Auditor General of Canada
240 Sparks Street
Ottawa, Ontario
K1A 0G6
VIA EMAIL: petitions@oag-bvg.gc.ca

FROM: DR. CHARIS KAMPHUIS

Environmental Law Centre
Murray and Anne Fraser Building, University of Victoria
PO Box 1700 STN CSC
Victoria, British Columbia
V8W 2Y2
VIA EMAIL: chariskamphuis@uvic.ca

Dear Commissioner DeMarco:

RE: REQUEST FOR A SECTION 23 PERFORMANCE AUDIT UNDER THE AUDITOR GENERAL ACT TO INVESTIGATE CANADA'S APPROACH, OR LACK THEREOF, TO THE SAFE RECYCLING AND DISPOSAL OF HYDROFLUOROCARBONS

INTRODUCTION

On behalf of Global Shapers - Vancouver Hub ("Global Shapers"), the Environmental Law Centre at the University of Victoria makes this submission to the Commissioner of the Environment and Sustainable Development (the "Commissioner"), requesting a section 23 inquiry into Canada's policy and regulatory regime regarding hydrofluorocarbons ("HFCs").¹

Global Shapers is an initiative of the World Economic Forum. The Vancouver Hub represents a cross-section of leaders in Vancouver committed to working collaboratively to make positive change in the city. Its members come from a variety of fields, including politics, technology, sustainability, media and business.

¹ Auditor General Act, RSC 1985 c A-17, s 23[AGA].



HFCs contain fluorine, carbon, and hydrogen, and are powerful greenhouse gases (“GHGs”).² They have become increasingly dominant in a variety of applications, including air conditioning, refrigeration, and thermal insulation.³ The United Nations has stated that HFC emissions are growing at a rate of about 8 percent per year, and annual emissions are projected to rise to 7-19 percent of global carbon dioxide (“CO₂”) equivalent emissions by 2050.⁴ Recently, the World Meteorological Organization (the “WMO”) stated that total carbon dioxide-equivalent emissions due to HFCs in 2020 were 19 percent higher than in 2016.⁵ According to the WMO, the “[r]adiative forcing from all HFCs in the atmosphere approximately doubled over the past decade [2008 - 2018].”⁶ Consequently, the increased use of HFCs has led to concerns about climate warming if they are not well regulated.

After a careful review of the available information, we believe there is a clear and compelling need to examine the Ministry of Environment and Climate Change Canada’s (“ECCC”) laws, regulations, policies and programs with respect to safe HFC disposal.

We urge the Commissioner to undertake an examination of the apparent failure of ECCC to meet the targets set out in the Federal Sustainable Development Strategy (the “Federal Strategy”) and to meet the objectives and implement the plans in ECCC’s department-specific Sustainable Development Strategy as they relate to the regulation of HFC disposal in Canada.⁷

Specifically, we urge you to investigate the apparent failure of ECCC to:

1. Create an effective, comprehensive, and transparent federal HFC regulatory regime which encompasses the entire life cycle of HFCs currently used across all sectors of the Canadian economy. This must include mechanisms to create comprehensive stewardship programs for the safe recycling and disposal of HFCs and their related products.
2. Collect data and report on how and where HFCs are being collected, destroyed, or recycled in Canada, in what quantity and from what source.

² Government of Canada, Environment and Climate Change Canada, “Canada 2022 National Inventory Report” (Gatineau, Quebec: Environment and Climate Change Canada, 2022) at 16.

³ *Ibid* at 1.

⁴ UNEP, “About the Montreal Protocol,” online: [https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol#:~:text=The%20Montreal%20Protocol%20on%20Substances,ozone%20depleting%20substances%20\(ODS\)\[https://perma.cc/7VX7-86CF\]](https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol#:~:text=The%20Montreal%20Protocol%20on%20Substances,ozone%20depleting%20substances%20(ODS)[https://perma.cc/7VX7-86CF]).

⁵ World Meteorological Organization, *Scientific Assessment of Ozone Depletion: 2022 Executive Summary* (Geneva: World Meteorological Organization, 2022) (“of this total, HFC-134a was responsible for approximately 30%, HFC-125 for 28%, HFC-23 for 20%, and HFC- 143a for 15%” at 28).

⁶ SA Montzka et al, “Chapter 2 Hydrofluorocarbons (HFCs)” in World Meteorological Organization, *Scientific Assessment of Ozone Depletion: 2018, Global Ozone Research and Monitoring Project — Report No. 58* (Geneva, Switzerland: World Meteorological Organization, 2018) at 27.

⁷ Government of Canada, Environment and Climate Change Canada, “Achieving a sustainable future – Federal sustainable development strategy 2022 to 2026” (2022), at 8, online: <<https://www.fsds-sfdd.ca/en>> [<https://perma.cc/YMV6-HZAD>] [FSDS 2022-2026]; Government of Canada, Environment and Climate Change Canada, “Departmental sustainable development strategy 2020 to 2023” (2022), online: <<https://www.canada.ca/en/environment-climate-change/corporate/transparency/priorities-management/departmental-sustainable-development-strategy/2020-2023.html-toc2>> [ECCC 2020 to 2023].

3. Adequately meet its obligations under article 9 of the *Montreal Protocol* to promote the technological changes needed to transition away from using high potency HFCs.⁸ ECCC appears to lack effective programs to promote alternatives to HFCs and the necessary technological change.

In this submission, we set out the contours of these regulatory gaps and shortcomings and we explain why we believe they constitute a failure on the part of ECCC to combat climate change and effectively and transparently meet its sustainable development goals. To better understand this issue, we have carefully studied publicly available information and held interviews with key stakeholders. Through this process, we have also discovered that important information about HFC disposal in Canada either does not exist or is not publicly available, thereby further warranting an investigation by the Commissioner.

We begin this submission by setting out the statutory authority for the Commissioner to investigate this matter, as well as the relevant provisions of the federal Sustainable Development Goals and the *Kigali Amendment* to the *Montreal Protocol*.⁹ We then provide a brief overview of the federal HFC disposal and recycling framework and highlight provincial examples of HFC disposal programs. Finally, we outline the problematic regulatory gaps that appear at both the federal and provincial levels, and provide a cases study of the automobile sector to highlight how the current HFC disposal regime is falling short.

CONTENTS

INTRODUCTION	1
INQUIRY AUTHORITY AND CANADA’S SUSTAINABLE DEVELOPMENT GOALS AND PRIORITIES	4
HFC REGULATION SCHEMES AND FRAMEWORKS	6
<i>Montreal Protocol and the Kigali Amendment</i>	6
The Federal Regulatory Regime for HFC Destruction and Recycling	7
Provincial Regulatory Regime for Destruction and Recycling.....	10
REGULATORY GAPS FOR SAFE HFC DISPOSAL IN CANADA	11
Lack of Stewardship Programs for Important Products Containing HFCs	12
<i>Case Study: Automobile Air Conditioning Units.....</i>	13
<i>RECOMMENDATION 1: undertake an inquiry to determine the precise nature of the gaps in stewardship program coverage of HFC DISPOSAL, AND recommend solutions to achieve comprehensive coverage of HFC products in stewardship programs across Canada.....</i>	14
Lack of Transparency and Record Keeping Regarding the Destruction and Recycling of HFCs.....	14

⁸ *Montreal Protocol on Substances that Deplete the Ozone Layer*, 16 September 1987, 1522 UNTS 3 (entered into force 1 January 1989, ratification by Canada 1 January 1989) [*Montreal Protocol*].

⁹ UNEP, UN Doc UNEP/OzI.Pro.28/12 (2016) 28th Mtg Annex 1 *Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer* (15 October 2016) [*Kigali Amendment*].

<i>RECOMMENDATION 2: investigate how and where HFCs are being collected, destroyed or recycled in Canada, in what quantity and from what source. The public does not currently have access to this information.....</i>	15
Lack of Research and Development under the <i>Kigali Amendment</i>	16
<i>Case Study: Supermarket Industrial Refrigeration Systems</i>	16
<i>RECOMMENDATION 3: investigate the extent to which ECCC is complying with the Kigali Amendment and effectively implementing Goals 4 and 9 of the 2022-26 Federal Strategy with respect to HFC replacement education, research, and development.</i>	17
CONCLUSION & SUMMARY OF RECOMMENDATIONS	17

INQUIRY AUTHORITY AND CANADA’S SUSTAINABLE DEVELOPMENT GOALS AND PRIORITIES

Your office’s authority for an inquiry into this matter is found in the *Auditor General Act* (“AGA”):¹⁰

1. Section 21.1 of the AGA provides that the purpose of the Commissioner is to “provide sustainable development monitoring and reporting on the progress of designated entities towards sustainable development.” ECCC is a designated entity.¹¹
2. Section 23(1)(a) of the AGA allows the Commissioner to make any inquiry they feel is necessary to monitor:

...the extent to which designated entities have contributed to meeting the targets set out in the Federal Sustainable Development Strategy and have met the objectives, and implemented the plans, set out in their own sustainable development strategies laid before the House of Parliament under section 11 or 12 of the Federal Sustainable Development Act [...].

In this section we identify the relevant portions of the sustainable development strategies for the federal government and their departments. Due to the deficiencies in HFC disposal policies and laws, we contend that ECCC is not significantly contributing to meeting the targets specified in the Federal Strategy and has not met some of the objectives or implemented plans set out its own departmental strategy.¹²

The *Federal Sustainable Development Act* (“FSDA”) requires the Minister of the Environment to develop and table a Federal Sustainable Development Strategy.¹³ On September 1, 2022, ECCC

¹⁰ AGA, *supra* note 1, ss 21.1, 23(1)a.

¹¹ Under the AGA, *supra* note 1, designated entities are defined in s 2 as having the same meaning as in s 2 of the *Federal Sustainable Development Act*, SC 2008, c 33, where a designated entity is stated to include a department named in schedule I to the *Financial Administration Act*, RSC 1985, c F-11. Schedule I to the *Financial Administration Act* lists the Department of the Environment.

¹² ECCC 2020 to 2023, *supra* note 7.

¹³ *Federal Sustainable Development Act*, SC 2008 c 33, ss 2, 9(1) [FSDA]. Beginning November 10, 2017, the Strategy must be tabled at least once every three years.

released the 2022-2026 Federal Sustainable Development Strategy in accordance with the *FSDA* (the “2022 – 2026 Federal Strategy”).¹⁴ This document contains 17 Sustainable Development Goals (“SDGs”), which “[set] out the Government of Canada’s goals, targets and implementation strategies for the next 4 years with a whole-of-government approach.”¹⁵

Under the *FSDA*, designated entities must contribute to the development of the Federal Sustainable Development Strategy, and draft entity-specific sustainable development strategies.¹⁶ The entity-specific strategies must “complement the federal strategy by setting out what individual organizations will do to support [the Federal Sustainable Development Strategy] goals and targets.”¹⁷ Designated entities must submit their strategies within one year of the 2022-2026 Federal Strategy,¹⁸ or by August 31, 2023. To our knowledge, at the time of writing, ECCC has not yet released its updated strategy. As a result, we refer here to ECCC’s 2020-2023 Departmental Strategy (“2020 – 2023 Departmental Strategy”), released under the previous Federal Sustainable Development Strategy.¹⁹

As stated, we believe that ECCC is failing to fulfill its obligations under the Federal Strategy and the 2020 – 2023 Departmental Strategy. First, with respect to Goal 1 of the 2020 – 2023 Departmental Strategy, ECCC committed to implementing measures that support pricing carbon pollution and reduce emissions to take “effective action on climate change [...] in partnership with provinces [...].”²⁰ In this regard, ECCC has pointed to its efforts to regulate HFCs. Specifically, the department cites the *Ozone Depleting Substances and Halocarbon Alternatives Regulations* (the “*ODSHAR*”),²¹ which are intended to satisfy Canada’s commitments under the *Kigali Amendment to the Montreal Protocol* to phase-down the import, export, and manufacturing of high-potency HFCs.²² While this phase-down is important, we contend that ECCC’s current approach to HFC *disposal* represents a major gap as HFCs are already widespread across the Canadian economy, and if they are not safely disposed of, their release into the atmosphere will contribute to further global warming.

Second, ECCC is falling short of meeting Goal 13 of the Federal Strategy to “Take Action on Climate Change and its Impacts”²³ and Goal 12 to “[Reduce] Waste and Transition to Zero Emission Vehicles.”²⁴ Notably, this latter goal supports target 12.4 of the United Nation’s SDG Global Indicator Framework, which, by 2020, aims to “achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international

¹⁴ FSDS 2022-2026, *supra* note 7.

¹⁵ FSDS 2022-2026, *supra* note 7 at 4.

¹⁶ *FSDA*, *supra* note 13, s 9(1.1).

¹⁷ FSDS 2022-2026, *supra* note 7 at 10.

¹⁸ *FSDA*, *supra* note 13, s 11(1).

¹⁹ Government of Canada, Environment and Climate Change Canada, *A Federal Sustainable Development Strategy for Canada 2019 to 2022* (Gatineau, Quebec: Environment and Climate Change Canada, 2019), online (pdf): <https://publications.gc.ca/collections/collection_2020/eccc/En4-136-2019-1-eng.pdf>; ECCC 2020 to 2023, *supra* note 7.

²⁰ ECCC 2020 to 2023, *supra* note 7.

²¹ *Ozone Depleting Substances and Halocarbon Alternatives Regulations*, SOR/2016-137 [*ODSHAR*].

²² *Ibid.*

²³ FSDS 2022-2026, *supra* note 7 at 149.

²⁴ FSDS 2022-2026, *supra* note 7 at 4.

frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.”²⁵ Also of relevance, Goal 4 of the Federal Strategy is “promoting knowledge and skills for sustainable development” and Goal 9 is to “foster innovation and green infrastructure in Canada.”²⁶

While ECCC is making efforts to meet the aforementioned goals, we explain how the department is falling short when it comes to the regulation of HFC disposal and the promotion of technological change for HFC use in high leakage sectors of the economy. We submit that ECCC must take steps to ensure that the entire HFC life cycle is regulated across the Canadian economy. We contend that ECCC’s current approach to HFC disposal constitutes a failure on its part to combat climate change and to meet its sustainable development goals effectively and transparently. As such, it falls squarely within the Commissioner’s purview to investigate the matter. We now turn to a discussion of the relevant regulatory schemes related to HFCs, with a particular focus on recycling and disposal.

HFC REGULATION SCHEMES AND FRAMEWORKS

Montreal Protocol and the Kigali Amendment

Canada signed the *Montreal Protocol* in 1987 (the “*Montreal Protocol*”).²⁷ This international treaty aims to eliminate global usage of ozone depleting substances (“ODS”), a term which refers to chemicals that deplete the ozone layer in the atmosphere, many of which are used as refrigerants.²⁸ The *Kigali Amendment* to the *Montreal Protocol* was passed in 2016 and applies to signatories of the *Montreal Protocol*.²⁹ This amendment adds HFCs to the list of controlled substances under the Protocol and provides for a “phase-down” schedule for countries to limit their production and use of HFCs.³⁰ HFCs are powerful greenhouse gases (“GHGs”) and can be thousands of times more potent than CO₂.³¹ The UN-backed Scientific Assessment Panel to the

²⁵ United Nations Department of Economic and Social Affairs, “Goal 12 Ensure sustainable consumption and production patterns” (2022), online: <<https://sdgs.un.org/goals/goal12>> [<https://perma.cc/6QSL-AF3N>].

²⁶ FSDS 2022-2026, *supra* note 7 at 49, 97.

²⁷ *Montreal Protocol*, *supra* note 8.

²⁸ *Ibid.*

²⁹ *Kigali Amendment*, *supra* note 9.

³⁰ The phase-down schedule culminates in a reduction of HFC use and production by 80 percent over the next 30 years (see United States Environmental Protection Agency, “Recent international developments under the Montreal Protocol,” online: <<https://www.epa.gov/ozone-layer-protection/recent-international-developments-under-montreal-protocol>> [<https://perma.cc/5777-488B>]).

³¹ Climate & Clean Air Coalition, “Hydrofluorocarbons (HFCs)”, online: <<https://www.ccacoalition.org/fr/slcp/hydrofluorocarbons-hfcs>> [<https://perma.cc/EKU6-WRNW>].

Protocol estimates that compliance with the *Kigali Amendment* will avoid global temperatures increases between 0.3 and 0.5 °C by the year 2100.³²

While the potential benefits of the effective implementation of the *Kigali Amendment* are significant, the terms of this instrument are not enough to effectively regulate HFCs. As stated previously, the phase-down of HFC use is only one aspect of the HFC regulation needed to achieve Canada's SDGs. Canada must also establish regulations to ensure the safe destruction of potent HFCs already in circulation in the Canadian economy to ensure that they do not contribute to global warming at the end of their life cycle.

The *Kigali Amendment* focuses on HFC import and manufacturing controls, and there are limited provisions on HFC destruction. The only destruction requirements apply to manufacturers of a single HFC, HFC-23, which require them to destroy it "to the extent practicable using [approved technologies]."³³ As such, the *Montreal Protocol* is not a comprehensive environmental treaty with mandatory obligations with respect to the full life cycle of all HFCs. In addition, while it enforces trade restrictions to curtail the use of a specific set of particularly harmful chemicals, it contains non-mandatory language with respect to the end-of-life destruction and recycling of these same chemicals.³⁴

The Federal Regulatory Regime for HFC Destruction and Recycling

ECCC administers several HFC-related regulations pursuant to the *Canadian Environmental Protection Act* ("CEPA"), including the *ODSHAR* and the *Federal Halocarbon Regulations* (the "FHR").³⁵ Pursuant to CEPA, on May 21, 2016, the Minister for the Environment gave notice that the *Notice requiring the preparation and implementation of pollution prevention plans in respect of halocarbons used as a refrigerant* ("P2 Notice") was in force.³⁶ In 2015, ECCC also released an updated Environmental Code of Practice for the elimination of fluorocarbon emissions from refrigeration and air conditioning systems (the "Code of Practice").³⁷ Additionally, in 2023, the federal government announced the Federal Offset Protocol: Reducing Greenhouse Gas Emissions

³² World Meteorological Organization, "Ozone layer recovery is on track, helping avoid global warming by 0.5°C" (9 January 2023), online: <<https://public.wmo.int/en/media/press-release/ozone-layer-recovery-track-helping-avoid-global-warming-05%C2%B0c>> [<https://perma.cc/3VZY-GXA>].

³³ *Kigali Amendment*, *supra* note 9, art 2J(6). HFC-23 has a Global Warming Potential of 12,400.

³⁴ *Montreal Protocol*, *supra* note 9, ss 6, 7.

³⁵ *Canadian Environmental Protection Act*, SC 1999, c 33 [CEPA]; *ODSHAR*, *supra* note 21; *Federal Halocarbon Regulations*, 2022, SOR/2022-110 [FHR].

³⁶ Notice requiring the preparation and implementation of pollution prevention plans in respect of halocarbons used as a refrigerant (Department of the Environment), (2016) C Gaz I, Vol 150, No 21, s 2(3) (*Canadian Environmental Protection Act*, 1999), online: <<https://gazette.gc.ca/rp-pr/p1/2016/2016-05-21/html/sup2-eng.html>> [P2 Notice].

³⁷ Government of Canada, Environment and Climate Change Canada, "Environmental code of practice for the elimination of fluorocarbon emissions from refrigeration and air conditioning systems" (April 2015, Errata June 2021), online: <<https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/code-practice-elimination-fluorocarbon-emissions.html>> [ECCC 2015].

from Refrigeration Systems, Version 1.0 (“Refrigeration Emissions Protocol”), which adopts the carbon credit approach enacted in the *Greenhouse Gas Pollution Pricing Act* (the “GGPPA”).³⁸

The *ODSHAR* implements Canada’s obligations under the *Kigali Amendment* by “setting out rules concerning certain ozone-depleting substances and certain products containing or designed to contain ozone-depleting substances.”³⁹ It restricts and phases-down the entry of HFCs into the Canadian market.⁴⁰ The *ODSHAR* also imposes restrictions on the manufacture of HFCs and products containing them in Canada.

The federal government also directly regulates HFC use and disposal on federal and Aboriginal lands and operations through the *FHR* and Code of Practice.⁴¹ On these lands, the *FHR* prohibits the release of HFCs and other chemicals into the environment, requires that inventories of large HFC containers be kept, and sets reporting obligations for releases of more than ten kilograms of any halocarbon.⁴² However, the *FHR* does not mandate standards for the destruction or reclamation of HFCs. There is no mandatory extended producer responsibility (“EPR”) system in place to facilitate recycling and destruction of HFCs on federal lands under the *FHR*. As such, the *FHR* is limited in scope and does not effectively govern the disposal and recycling of HFCs on federal and Aboriginal lands in Canada. For its part, the Code of Practice states that a refrigerant is to be returned to a wholesaler, an approved facility, or a hazardous waste disposal centre.⁴³ No further detail is provided, and this code is not binding.

In 2016, ECCC exercised its authority under section 56(1) of *CEPA* to create the P2 Notice.⁴⁴ The P2 Notice applies to persons that manufacture or reclaim halocarbons to be used as refrigerants or persons that import 100 kilograms or more of halocarbons per year.⁴⁵ The P2 Notice requires that these companies “prepare and implement a pollution prevention plan in respect of halocarbons used as a refrigerant.” Section 4 of the P2 Notice lists a set of factors to consider in preparing a plan and one of those factors is to “join or develop a stewardship program [...]”⁴⁶ The P2 Notice,

³⁸ Government of Canada, Environment and Climate Change Canada, “Federal Offset Protocol: Reducing greenhouse gas emissions from refrigeration systems, version 1.0” (February 2023), online: <<https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system/federal-greenhouse-gas-offset-system/compendium-protocols/reducing-emissions-refrigeration-systems-version-1-0.html>> [Refrigeration Emissions Protocol]; *Greenhouse Gas Pollution Pricing Act*, SC 2019 c 12 [GGPPA].

³⁹ *ODSHAR*, *supra* note 21, s 2.

⁴⁰ Government of Canada, Environment and Climate Change Canada, “General information: Ozone-depleting substances and halocarbon alternatives regulations” (2023), online: <<https://www.canada.ca/en/environment-climate-change/services/air-pollution/issues/ozone-layer/depleting-substances-halocarbon-alternatives-regulations.html>>.

⁴¹ *CEPA*, *supra* note 35 at s 3(1) (“*aboriginal land* means (a) reserves, surrendered lands and any other lands that are set apart for the use and benefit of a band and that are subject to the *Indian Act*; (b) land, including any water, that is subject to a comprehensive or specific claim agreement, or a self-government agreement, between the Government of Canada and aboriginal people where title remains with Her Majesty in right of Canada; and (c) air and all layers of the atmosphere above and the subsurface below land mentioned in paragraph (a) or (b)”); *FHR*, *supra* note 35.

⁴² Government of Canada, Environment and Climate Change Canada, “Federal halocarbon regulations information” (2022), online: <<https://www.canada.ca/en/environment-climate-change/services/air-pollution/issues/ozone-layer/measures-protect/federal-halocarbon-regulations-information.html>>.

⁴³ ECCC 2015, *supra* note 37.

⁴⁴ *P2 Notice*, *supra* note 36.

⁴⁵ *P2 Notice*, *supra* note 36, s 2(1).

⁴⁶ *P2 Notice*, *supra* note 36, s 4(4).

and the requirement to join a stewardship program, explicitly do not apply to a significant number of HFC users, such as manufacturers of HFCs for mobile air conditioning systems or domestic appliances.⁴⁷

Most companies covered by the P2 Notice have joined Refrigerant Management Canada (“RMC”), an industry-based non-profit organization that manages a recognized stewardship program. We understand that RMC serves as the primary option for the destruction of HFCs in Canada. RMC is funded by levies collected from eight member companies covered by the P2 Notice who have opted to participate in RMC’s program. For those companies paying into the program, RMC destroys the HFCs collected and delivered by these companies free of charge. For any company or individual who is not paying into the program, but who would like to use RMC’s services for the purposes of recycling or destroying HFCs, RMC charges a fee to destroy refrigerant, and also requires that the amount of HFC delivered at any given time be at least 30 kilograms or greater.⁴⁸ Notably, RMC is the only entity that offers collection of HFCs for safe disposal across Canada. In addition to RMC, there are two companies in Canada who have created their own individual P2 stewardship programs, rather than joining RMC.⁴⁹

The RMC disposal and recycling system for HFCs in Canada can be illustrated by considering the pathways available to contractors servicing heating, ventilation and air conditioning equipment. These contractors bring end-of-life refrigerant (HFC) to a wholesaler that is a member of the RMC stewardship program. The wholesaler tests the HFC to determine if it can be reclaimed. Any unreclaimable HFC slated for destruction is then shipped to one of two collection sites serving RMC in Canada (one in Ontario and one in Nova Scotia). RMC then ships the HFCs to a facility in Texas for destruction and/or reclamation. Notably, at present there appears to be no functioning HFC destruction facility in Canada, although there is some discussion that a new facility may open

⁴⁷ P2 Notice, *supra* note 36, s 2(3) excludes persons who:

- [M]anufacture, reclaims or imports halocarbons, whether alone or in a mixture, to be used entirely as a refrigerant in mobile air conditioning systems;
- manufactures, reclaims or imports halocarbons, whether alone or in a mixture, to be used entirely as a refrigerant in domestic appliances;
- manufactures, reclaims or imports halocarbons, whether alone or in a mixture, to be entirely exported out of Canada;
- imports on any occasion no more than 500 kg of halocarbon refrigerant to be used entirely to charge air conditioning or refrigeration systems at facilities owned or operated by the importer, and the importer has entered into an agreement with a stewardship program for the reclamation and destruction at the end of the useful life of the refrigerants; or
- imports halocarbons that are entirely found in (i) pre-charged, mobile or stationary, refrigeration and air conditioning systems, (ii) aerosols, (iii) foams, (iv) solvents, or (v) fire suppression/extinguishing systems.

⁴⁸ Interview of Kathleen O’Malley (RMC) and Nancy Larsen (RMC) by Charis Kamphuis and Lydia Young (10 November 2022) [Interview with RMC].

⁴⁹ These companies are United Refrigeration of Canada Recover Refrigerant Management Program (14 collection sites in Ontario), and AGas Canada Pollution Prevention Plan Refrigerant Management Program (only offered in certain provinces) see Government of Canada, Environment and Climate Change Canada, “Halocarbons: pollution prevention notice performance report” (2021), online: <<https://www.canada.ca/en/environment-climate-change/services/pollution-prevention/planning-notices/performance-results/halocarbons-overview/performance-report.html#toc6>>.

in Quebec this year.⁵⁰ As such, HFCs collected across Canada by either RMC, United, or AGas that need to be disposed of must be shipped to the United States (“US”).

The final feature of the federal government’s approach to regulating the disposal of HFCs is the 2023 Refrigeration Emissions Protocol (the “Protocol”).⁵¹ The Protocol adopts the carbon-credit approach enacted in the *GGPPA* and offers a one-time carbon-credit incentive to those who safely destroy HFCs already present in refrigeration or air conditioning systems that are being retrofitted or replaced. To be eligible, those applying for credits must send their HFCs to an authorized reclamation or destruction collection facility located in Canada.⁵² Notably, it appears that this program is offering a carbon credit to companies to do something that is already required by law (safe disposal). This adds further concern that safe disposal is not consistently occurring across the Canadian economy.

Provincial Regulatory Regime for Destruction and Recycling

Some provinces have regulations that prohibit the release of HFCs into the atmosphere. For example, the Quebec *Regulation Respecting Halocarbons* prohibits the direct or indirect emission of halocarbons into the atmosphere, with limited exceptions.⁵³ British Columbia’s (“BC”) *Ozone Depleting Substances and Other Halocarbon Regulation* (the “*Ozone Regulation*”) also prohibits the release of HFCs into the atmosphere.⁵⁴ However, consistent provincial EPR programs for HFCs appear to be lacking.

We were only able to identify two provinces with mandatory EPR programs for some domestic appliances that contain HFCs: BC’s Major Appliances Recycling Roundtable (“MARR”) and Quebec’s GoRecycle. It is our understanding that BC and Quebec have the most comprehensive EPR programs in the country with respect to products containing HFCs. Both programs facilitate the safe disposal of certain domestic appliances and are funded by fees included in the sale price of the appliances.

GoRecycle is a non-profit organization that administers the mandatory EPR program required for recycling household appliances in Quebec.⁵⁵ GoRecycle works with PureSphera and RIVRA, two companies that reportedly recycle or destroy refrigerant gases.⁵⁶ It is not clear whether either of

⁵⁰ Interview with RMC, *supra* note 48; Interview of Chris Campbell (MARR) and Michael Zarbl (MARR) by Charis Kamphuis and Lydia Young (24 November 2022).

⁵¹ Refrigeration Emissions Protocol, *supra* note 38; *GGPPA*, *supra* note 38.

⁵² Refrigeration Emissions Protocol, *supra* note 38, ss 4.3, 8.1.3.

⁵³ *Regulation respecting halocarbons*, CQLR c Q-2 r 29, s 5.

⁵⁴ *Ozone Depleting Substances and Other Halocarbon Regulation*, BC Reg 387/99, ss 3, 4 [*Ozone Regulation*].

⁵⁵ GoRecycle, “Who we are,” online: <<https://www.gorecycle.com/en/about/>> [<https://perma.cc/G5NG-NBG9>].

⁵⁶ PureSphera, “Powerful solutions for GHG reduction,” online: <<https://www.puresphera.com/en>> [<https://perma.cc/S6N2-HH9P>]; RIVRA, “Under the recognized expertise of social economy enterprises” online: <<https://www.coderr.ca/rivra>> [<https://perma.cc/2YGX-H2HR>].

these GoRecycle partners send their end-of-life HFCs to RMC, or if they have an alternative destruction option available to them.

Like GoRecycle, MARR is an industry-created non-profit organization whose goal is to implement the stewardship program mandated by BC's *Recycling Regulation*.⁵⁷ MARR collects household appliances and ships the related HFCs to RMC for destruction.⁵⁸ However, MARR does not capture all HFCs used in BC, as it only covers domestic appliances. For HFC equipment other than domestic appliances, such as motor vehicle air conditioner or equipment like heat pumps, BC's *Ozone Regulation* applies. Section 3 of the regulation clarifies that most of its provisions apply equally to certain products that contain HFCs, including heat pumps and motor vehicles.⁵⁹

The *Ozone Regulation* states that a seller (defined as a retailer, supplier or a manufacturer) of HFCs must "prepare and retain...a plan for accepting [HFCs] returned for recycling, conversion or destruction, or ... participate in a stewardship program."⁶⁰ These plans or stewardship programs must "demonstrate how [HFCs] will be effectively collected [...] stored ... [and] disposed of in an environmentally responsible manner."⁶¹ The seller must also keep records of the returned HFCs. Schedule B of the *Ozone Regulation* sets out requirements for the equipment and removal standards for different HFCs.

Despite these regulations, there appears to be significant gaps in BC's program for HFC recycling and destruction. In the next section, we convey our understanding of these gaps and their potential implications across Canada.

REGULATORY GAPS FOR SAFE HFC DISPOSAL IN CANADA

To summarize the legal framework described in the previous section, ECCC broadly controls the import, export, and manufacture of HFCs, strictly prohibits HFCs release on federal and Aboriginal lands, and requires safe HFC destruction within a narrow subset of industries.⁶² Additionally, some provinces prohibit the release of HFCs and at least two have EPR programs (MARR and GoRecycle). However, there is significant uncertainty regarding how a wide range of HFCs are recycled or disposed of in Canada. As Canada begins to phase-down the import and manufacturing of HFCs, it is imperative that Canada create an effective regime for the disposal of the many potent HFCs still in use within our economy. Comprehensive stewardship programs and transparency are critical.

⁵⁷ *Recycling Regulation*, BC Reg 449/200 [*Recycling Regulation*].

⁵⁸ *Recycling Regulation*, *supra* note 57 at schedule 3.

⁵⁹ Sections 4 to 8, 10, 11 (2), 12 to 18, 21 and 22 apply to a container, air conditioning and refrigeration equipment, a motor vehicle air conditioner, and fire extinguishing equipment that contains or is intended to contain other halocarbons (*Ozone Regulation*, *supra* note 54, s 3).

⁶⁰ *Ozone Regulation*, *supra* note 54, ss 4(1), 12(3).

⁶¹ *Ozone Regulation*, *supra* note 54, s 14(4).

⁶² Through the *ODSHAR* *supra* note 21; the *FHR*, *supra* note 35; and the *P2 Notice*, *supra* note 36.

Lack of Stewardship Programs for Important Products Containing HFCs

While there appears to be a blanket prohibition on the unsafe release of HFCs in federal jurisdiction, there are a significant number of sellers and users within the Canadian economy with no federally mandated mechanism to safely dispose of their HFCs. For those entities not captured under the federal P2 Notice, there appears to be no federally mandated system to facilitate the disposal and/or recycling of HFCs. Similarly, for companies or products not captured under provincial EPR or other stewardship programs, there appears to be numerous barriers to accessing proper HFC disposal. There appears to be no clear tracking or record keeping of the safe disposal of HFCs across all sectors of the economy.

Turning to our example of BC, we understand that MARR is one of the strongest provincial HFC-focused EPR programs. However, it only covers certain domestic appliances. While the *Ozone Regulation* requires that sellers of HFCs have a disposal plan or be part of a stewardship plan, despite multiple inquiries, we have not been able to confirm that such plans exist for products like air conditioners in automobiles or heat pumps. If there are gaps in the regulation of HFC disposal in BC, which has arguably one of the best provincial HFC disposal systems in the country, then these gaps are likely even larger in other provinces and territories.

To illustrate, a provincial entity that collects HFCs from discarded products may not be subject to the P2 Notice and may not be a member of a provincial and/or federal stewardship program. If they seek RMC's disposal services, which is the only body with a cross-Canada network of collection sites, they are required to collect at least 30 kilograms of HFC before bringing the chemicals to RMC for destruction. Upon delivering these HFCs to an RMC collection site, this entity would be required to pay out of pocket fees of \$20 per kilogram for a total of \$600. This is in addition to any collection and transportation costs that the entity may incur.

As mentioned, there is no public data on how much HFC product is being collected by RMC. If an entity does not have access to an RMC collection site or to a provincial stewardship program, their handling of HFCs will likely go unreported. It is unclear how they would dispose of these HFCs, as there is no facility for safe destruction in Canada. Given these significant barriers to safe disposal, and a dearth of data and reporting, we believe that there is a serious risk that HFCs are being unsafely released in Canada.

Further, if a product containing HFCs is not covered by federal or provincial EPR programs, it is unclear who bears the legal responsibility for the environmentally sustainable disposal of the substance.

Therefore, existing federal and provincial stewardship programs in Canada only cover a limited scope of HFC products. Canada needs a comprehensive matrix of stewardship programs to facilitate the safe disposal of all HFCs currently in use in the Canadian economy.

CASE STUDY: AUTOMOBILE AIR CONDITIONING UNITS

The disposal of HFCs found in automobile air conditioning units illustrates how important products fall through gaps in federal and provincial stewardship programs. If such a commonly used HFC product like an automobile air-condition unit is not adequately covered by the current regime, then it is likely that other products are not covered.

The federal government directly limits the import and use of certain HFCs affiliated with automobile air conditioners.⁶³ Section 64.4 of the *ODSHAR* imposes limits on the import of products containing HFCs with a global warming potential (“GWP”) above a set limit. Pursuant to section 64.4(3), it is prohibited to import an automobile with an air conditioning system that contains, or is designed to contain, an HFC listed in schedule 1.1 of the *ODSHAR* with a GWP greater than 150.⁶⁴ Similarly, section 65.02(2) applies the same prohibition to any person manufacturing an automobile in Canada that is not intended for export.⁶⁵ In compliance with the *Kigali Amendment*, persons who have been granted a consumption allowance under the *ODSHAR* are required to reduce their HFC consumption in accordance with the phase-down schedule laid out in section 65.06(1).⁶⁶

However, the federal government appears to have no system, policy, or law in place to ensure that automobile air conditioner HFCs are safely destroyed or recycled. Automobile companies are entirely exempted from federal stewardship program requirements and are not members of RMC. The P2 Notice does not apply to automotive companies that import pre-charged air conditioning systems – or for those who manufacture, reclaim or import HFCs to be used in mobile air conditioning systems, such as those found in vehicles.⁶⁷ There is no publicly available information on whether these entities are paying the required fees and opting to send HFCs from discarded automotive air conditioners to RMC or another stewardship organization at their own expense. It is possible that RMC may collect HFCs from the automotive sector; however, after inquiries with a range of stakeholders, we could not verify whether this is happening.

In BC, the *Ozone Regulation* explicitly prohibits the release of any “ozone depleting substance or other halocarbon” from a motor vehicle air conditioner.⁶⁸ It places the onus either on each seller to draft a plan for the destruction or recycling of products that contain HFCs or on industry to

⁶³ *ODSHAR*, *supra* note 21, s 65.02(2).

⁶⁴ *ODSHAR*, *supra* note 21, s 64.4(3), schedule 1.1.

⁶⁵ *ODSHAR*, *supra* note 21, s 65.02(2).

⁶⁶ *ODSHAR*, *supra* note 21, s 65.06(1); Consumption under the *Montreal Protocol* refers to an amount of a chemical and is calculated using the following formula: Consumption = (Production + Imports – Exports), where Production = (Manufactured – Destroyed – Used for Feedstock) (see *Montreal Protocol*, *supra* note 8, arts 1(5), 1(6)).

⁶⁷ *P2 Notice*, *supra* note 36, ss 2(3)(a), (e).

⁶⁸ *Ozone Regulation*, *supra* note 54, s 4(1)(b).

create a stewardship program.⁶⁹ However, after multiple inquiries to provincial officials, we could not verify that such a plan or stewardship program exists for the automobile sector.⁷⁰

Given the lack of EPR systems for HFCs in automobile air conditioners, there is no way to determine how they are being collected and destroyed across Canada.

In sum, prohibiting HFC release without creating a mandatory program to facilitate the safe destruction of HFCs in automobile air conditioners appears to be a failure at the provincial and federal levels. Canada lacks a national program to ensure that all HFCs in circulation in the Canadian economy will be safely destroyed. There is an uneven patchwork of stewardship programs that suffer from various gaps, while the scope of these gaps seems to vary between provinces. At a minimum, there appears to be a serious risk that HFCs in automotive air conditioning units are being released into the atmosphere as the pathway to destroying such products safely is fraught with obstacles. This is the opposite of an effective system to protect the environment and achieve Canada's sustainable development goals.

RECOMMENDATION 1: UNDERTAKE AN INQUIRY TO DETERMINE THE PRECISE NATURE OF THE GAPS IN STEWARDSHIP PROGRAM COVERAGE OF HFC DISPOSAL, AND RECOMMEND SOLUTIONS TO ACHIEVE COMPREHENSIVE COVERAGE OF HFC PRODUCTS IN STEWARDSHIP PROGRAMS ACROSS CANADA.

Lack of Transparency and Record Keeping Regarding the Destruction and Recycling of HFCs

Given the regulatory gaps described above, there is limited transparency and publicly available reporting on the destruction of HFC products covered by stewardship programs. For HFC products not captured under a program, transparency and reporting is limited or non-existent. For example, RMC will only disclose the total amount of HFC that has been destroyed to date.⁷¹ This lack of public reporting on safe HFC destruction leaves the following questions:

1. What is the quantity of HFCs being disposed of under the P2 Notice through RMC or other stewardship programs?

⁶⁹ *Ozone Regulation*, *supra* note 54, s 12 (seller is defined as "a person who sells an ozone depleting substance and includes, without limitation, a retailer, a supplier and a manufacturer....").

⁷⁰ We also inquired as to whether such a plan or stewardship program exists for the heat pump sector. We were unable to verify if these exist.

⁷¹ Refrigerant Management Canada, online: *The Heating, Refrigeration and Air Conditioning Institute of Canada* <<https://www.hrai.ca/refrigerant-management-canada>> [<https://perma.cc/3ZQ2-37Y7>].

2. What is the quantity of HFCs being disposed of by RMC that is not covered by the P2 Notice and what are the source products of these HFCs? Presumably this is another income stream for RMC.

ECCC has informed us that it will not disclose the amount of refrigerant recovered for reclamation or destruction by RMC, either within or outside the scope of the P2 stewardship program. According to ECCC, such information is confidential due to competition concerns between entities covered by the P2 Notice.⁷² While we are not equipped to evaluate these claims, we note that the BC equivalent, MARR, provides fulsome disclosure of all HFCs it collects and sends to RMC collection sites.⁷³

As such, it is impossible for the public to determine how closely ECCC is monitoring the destruction or recycling of HFCs across Canada. For example, in their 2021 P2 Notice Performance report, the ECCC stated that it will “continue to gather data and information on the management of halocarbons through the monitoring of the companies’ websites.”⁷⁴ Given ECCC’s position that this data is confidential, regulation based on monitoring websites raises serious questions about the efficacy of ECCC’s strategy.

Without access to information on where and how HFCs are destroyed, in what quantities, and from what source products, the public’s ability to evaluate federal and provincial government programs is seriously undermined. The lack of publicly available information weakens the public’s trust and makes it harder to hold the government to account.

Provincially, there appears to be a similar lack of accessible information. For example, the BC *Ozone Regulation* requires sellers of HFCs, who are not members of a stewardship program, to prepare plans for the destruction, recycling, or conversion of HFCs. However, we were not able to find evidence of such plans on relevant company websites.⁷⁵ Similarly, we were unable to confirm that these plans and programs exist, either through searches of the BC Government’s website or requests to provincial officials.

RECOMMENDATION 2: INVESTIGATE HOW AND WHERE HFCs ARE BEING COLLECTED, DESTROYED OR RECYCLED IN CANADA, IN WHAT QUANTITY AND FROM WHAT SOURCE. THE PUBLIC DOES NOT CURRENTLY HAVE ACCESS TO THIS INFORMATION.

⁷² ECCC, “Halocarbons: pollution prevention notice performance report” (2021), at Overall Results, online: <<https://www.canada.ca/en/environment-climate-change/services/pollution-prevention/planning-notices/performance-results/halocarbons-overview/performance-report.html#toc6>> [ECCC Halocarbons Report].

⁷³ See e.g. MARR, “Annual report: Major appliance recycling roundtable” (2021), online: <<https://www.marrbc.ca/?AA=Download&AT=202&AD=87,DIFile>> [https://perma.cc/Q43F-3BJR].

⁷⁴ ECCC Halocarbons Report, *supra* note 72.

⁷⁵ We searched the websites of heat pump manufacturers operating in British Columbia.

Lack of Research and Development under the *Kigali Amendment*

Article 9 of the *Montreal Protocol* requires parties to co-operate in promoting the best available technology for the use of controlled substances, and viable alternatives.⁷⁶ This article also requires parties to participate in promoting public awareness on the environmental effects of controlled substances, including HFCs.⁷⁷ The 2022-2026 Federal Strategy outlines several goals to meet this commitment, namely Goal 4, to promote knowledge and skills for sustainable development and Goal 9, to foster innovation and green infrastructure in Canada.

Despite extensive searches, we have not found evidence of a specific federal research and development initiative or a public awareness program concerning HFCs. This is problematic because compliance with the phase-down provisions of the *Kigali Amendment* requires that manufacturers of products containing HFCs and industrial users of HFCs are incentivized and have the technical know-how to transition to low global warming refrigerants.

CASE STUDY: SUPERMARKET INDUSTRIAL REFRIGERATION SYSTEMS

HFC leakage from supermarket refrigeration systems highlights the need for improved ECCC policies and regulations.⁷⁸ In the US, the Environmental Investigation Agency found HFC leakage in 55 percent of tested grocery stores.⁷⁹ Green Chill, a partnership between the US Environmental Protection Agency and industry that is aimed at reducing refrigerant emissions, found that an average US supermarket refrigeration system holds 3,500 pounds of refrigerant, of which 25 percent will leak into the atmosphere over the course of a year.⁸⁰ According to the North American Sustainable Refrigeration Council, transitioning to low global warming potential natural refrigerants is made difficult by high upfront costs, a shortage of knowledgeable workers, and a lack of performance data.⁸¹

To our knowledge, supermarkets in Canada are under no obligation to transition to low global warming potential refrigeration systems, or to upgrade their existing systems to prevent leaks. The phase-down through the *ODSHAR* encourages this transition; however, it is unclear to what extent this phase-down will incentivize a transition away from HFC source products currently in use in

⁷⁶ As per the *Kigali Amendment*, article 9 applies to HFCs (*Montreal Protocol*, *supra* note 8, art 9).

⁷⁷ “Controlled substances” includes a large list of HFCs (see: *Montreal Protocol*, *supra* note 8, art 1, Annex F).

⁷⁸ Emily Chung, “How supermarket freezers are heating the planet, and how they could change” (29 January 2023), online: <<https://www.cbc.ca/news/science/hfc-climate-supermarkets-1.6726627>> [<https://perma.cc/A9RH-XKDJ>].

⁷⁹ Environmental Investigation Agency, “Leaking havoc – exposing your supermarket’s invisible climate pollution” online: <<https://www.climatefriendlysupermarkets.org/leaking-havoc>> [<https://perma.cc/8TBJ-8FAC>].

⁸⁰ GreenChill, “Profile of an average US supermarket’s greenhouse gas impacts from refrigeration leaks compared to electricity consumption” (2011), online (pdf): <https://www.epa.gov/sites/default/files/documents/gc_averagestoreprofile_final_june_2011_revised_1.pdf> [<https://perma.cc/8GR6-YWFR>].

⁸¹ North American Sustainable Refrigeration Council, “The HFC problem – why natural refrigerants,” online: <<https://nasrc.org/why-natural-refrigerants>> [<https://perma.cc/KQF4-2DWC>].

supermarkets. Recently, the federal government signaled its intention to incentivize investments in HFC-related technology change by offering carbon credits to industries using refrigerants.⁸² However, the technological change required to initiate this shift is significant and costly, and carbon credits alone may be inadequate to achieve this result. Moreover, a carbon credit system cannot be a substitute for Canada's international obligations regarding HFCs in the *Kigali Amendment* to invest in research, development, and public education.

RECOMMENDATION 3: INVESTIGATE THE EXTENT TO WHICH ECCC IS COMPLYING WITH THE *KIGALI AMENDMENT* AND EFFECTIVELY IMPLEMENTING GOALS 4 AND 9 OF THE 2022-26 FEDERAL STRATEGY WITH RESPECT TO HFC REPLACEMENT EDUCATION, RESEARCH, AND DEVELOPMENT.

CONCLUSION & SUMMARY OF RECOMMENDATIONS

There is strong evidence that HFC leakage to the atmosphere is a serious impediment to controlling GHG emissions and limiting global warming. In order to comply with goals 1 and 2 of the 2022-2026 Federal Strategy, and goal 1 of the 2020-2023 ECCC Departmental Strategy, a rapid phase-down of HFC production, and the implementation of effective systems to ensure safe HFC disposal, are required.

Our research indicates that there are serious gaps in Canada's approach to HFC disposal. For this reason, we respectfully request that the Commissioner investigate into the efficacy of ECCC's HFC-related disposal regulations and policies, as well as its programs to promote research, development, and education toward technological change. Specifically, we believe this inquiry should focus on:

1. **Determining the precise nature of gaps in stewardship program coverage of HFC disposal, and recommending solutions to achieve comprehensive coverage of HFC products in stewardship programs across Canada.**
2. **Investigating how and where HFCs are being collected, destroyed, or recycled in Canada, in what quantity and from what source. The public does not currently have access to this information.**
3. **Investigating the extent to which ECCC is complying with the *Kigali Amendment* and effectively implementing Goals 4 and 9 of the 2022-2026 Federal Strategy with respect to HFC replacement education, research, and development.**

⁸² Refrigeration Emissions Protocol, *supra* note 38.

Throughout this submission, we have noted that our ability to determine the seriousness of the gaps between the provincial and federal schemes is limited by a lack of publicly available information in numerous key areas. This adds further urgency to our call for an investigation by the Commissioner. Canada needs an effective, comprehensive, and transparent approach to ensuring that HFCs are safely disposed of across all sectors of the Canadian economy. An inquiry on the part of the Commissioner is the first necessary step towards achieving this important goal.

Thank you for your consideration of our request and we would be happy to answer any questions you may have with respect to the research and recommendations presented in this submission.

Sincerely,

Charis Kamphuis

Dr. Charis Kamphuis, ELC Lawyer

"Parker Fogler"

Parker Fogler, Law Student

"Lydia Young"

Lydia Young, Law Student

"Lisa Harris"

Lisa Harris, Articled Student

Please address any correspondence in the matter to:

Arushi Raina
WEF Global Shapers Vancouver volunteer
Arushiraina.change@gmail.com