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August 18, 2023

TO: THE HONOURABLE GEORGE HEYMAN

Minister of Environment and Climate Change Strategy PO Box 9047 STN Provincial Government Room 112, Parliament Buildings Victoria, British Columbia V8W 9E2 VIA EMAIL: <u>ENV.minister@gov.bc.ca</u>

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: <u>chariskamphuis@uvic.ca</u>

Dear Minister Heyman,

RE: REQUEST FOR AN INQUIRY INTO COMPLIANCE WITH HFC DISPOSAL REQUIREMENTS UNDER THE OZONE DEPLETING SUBSTANCES AND OTHER HALOCARBONS REGULATION

We write to you on behalf of our client, World Economic Forum Global Shapers – Vancouver Branch.¹ With this letter, we request that you undertake an inquiry into the possible absence of recycling plans and stewardship programs for automobile air conditioners and heat pumps containing hydrofluorocarbons ("HFCs"), as required by section 12 of the Ozone Depleting Substances and Other Halocarbons Regulation ("Ozone Regulation").²

As per section 113(1) of the *Environmental Management Act* ("*EMA*"), you have the authority to "order an inquiry with respect to the environment" if you consider it necessary.³ Below, we present our findings that demonstrate that it is necessary to conduct such an inquiry into how certain products containing HFCs are being recycled and disposed of in British Columbia ("BC"). Please note that the information we present here is current to the best of our knowledge to the date of this letter.

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. For more information on this organization, visit their website: https://www.globalshapers.org/ [https://www.globalshapers.org/ [

² Ozone Depleting Substances and Other Halocarbons Regulation, BC Reg 387/99 [Ozone Regulation].

³ Environmental Management Act, SBC 2003, c 53, s 113(1) [EMA].

1. OVERVIEW OF THE ISSUES

- HFCs are potent greenhouse gases ("GHGs").⁴ Canada, through its international climate commitments, has committed to dramatically phasedown the use of certain HFCs.⁵
- Heat pumps and automobile air conditioners contain HFCs. However, unlike other products containing HFCs (i.e., refrigerators), they are not part of the BC Extended Producer Responsibility Program ("EPR") established under the *Recycling Regulation*.⁶
- Instead, heat pumps and automobile air conditioners are regulated under the *Ozone Regulation*.⁷ Section 12 requires sellers to prepare a plan for accepting HFCs for recycling, conversion, or destruction, or to participate in a stewardship program.
- In response to our requests, provincial public servants confirmed that, at present, there are no section 12 stewardship programs for heat pumps and automobile air conditioners. They were also unable to confirm the existence of any section 12 sellers' plans for recycling, conversion, or destruction of HFCs in heat pumps or automobile air conditioners.

2. HEAT PUMPS AND AUTOMOBILE AIR CONDITIONERS CONTAIN HFCS

HFCs are potent GHGs due to their strong ability to trap infrared heat in the Earth's atmosphere.⁸ While they are relatively short-lived in the atmosphere (lingering between 15 and 29 years),⁹ they can be thousands of times more damaging to the climate than carbon dioxide.¹⁰ According to researchers, without effective regulation, worldwide HFC emissions are projected to increase and contribute to a global temperature rise of 0.5°C by 2100.¹¹ The United Nations Environment Programme has stated: "[u]rgent action on HFCs is needed to protect the climate system."¹²

At present, most refrigerating and air conditioning devices and appliances rely on HFCs. For example, Heat pumps use HFCs – in fact, the most common fluids in heat pumps are HFCs.¹³ These electrical

⁴ See Guus JM Velders et al, "Projections of hydrofluorocarbon (HFC) emissions and the resulting global warming based on recent trends in observed abundances and current policies" (2022) 22 Atmos Chem Phys 6087, DOI: <u>https://doi.org/10.5194/acp-22-6087-2022</u> [Guus et al].

⁵ UNEP, UN Doc UNEP/Ozl.Pro.28/12 (2016) 28th Mtg Annex 1 *Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer* (15 October 2016).

⁶ Recycling Regulation, BC Reg 449/2004 [Recycling Regulation].

⁷ Ozone Regulation, supra note 2.

⁸ Guus et al, *supra* note 4.

⁹ Climate & Clean Air Coalition, "Hydrofluorocarbons (HFCs)", online:

<<u>https://www.ccacoalition.org/fr/slcps/hydrofluorocarbons-hfcs</u>> [<u>https://perma.cc/EKU6-WRNW</u>]. ¹⁰ *Ibid*.

¹¹ The implementation of the *Kigali Amendment* to the *Montreal Protocol* has reduced the 0.5C estimate to 0.1C, provided that signatories abide by the amendment see Guus et al, *supra* note 4.

¹² UNEP, "About Montreal Protocol", online: <<u>https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol</u>> [https://perma.cc/CMP5-RU3Q].

¹³ See WSP, "The importance of refrigerants in heat pump selection" (28 March 2018), online: <<u>www.wsp.com/en-gb/insights/the-importance-of-refrigerants-in-heat-pump-selection</u>> [<u>https://perma.cc/WGT7-7SP8</u>].

devices "convert energy from external heat sources (air, water, etc.) to useful heat[ing]"¹⁴ or cooling.¹⁵ Heat pump operation is similar to that of refrigerators or air conditioners because the transfer of heat "is accomplished by circulating refrigerants."¹⁶ There are three general types of heat pumps: central heat pumps, ductless mini-splits, and heat pump hot water tanks.¹⁷

3. HEAT PUMPS AND AUTOMOBILE AIR CONDITIONERS ARE PREVALENT IN BC

Due to their energy efficiency, the BC government has prioritized increasing the use of heat pumps throughout the province as part of its "Roadmap to 2030" policy.¹⁸ There are currently several provincial rebates available to consumers to encourage the installation of heat pumps in homes across the province.¹⁹ As a result, BC has seen double-digit growth in heat pump demand in the past few years,²⁰ which is in addition to a historical near-doubling of installations from 2000-2016.²¹ In this context, BC should expect to see the installation of tens of thousands of new heat pumps in buildings per year for decades to come.

Since heat pumps are becoming more prevalent, it is vital that there are coherent and efficient plans in place to ensure that the HFCs in these pumps are properly recycled and/or disposed of at the end of their life cycle.

HFCs are also widely used in automobile air conditioners.²² The United States Environmental Protection Agency estimates that automobile air conditioners account for approximately 13 percent of global HFC emissions.²³ According to the Insurance Corporation of BC, in 2021 there were more than 2.6 million

¹⁴ Ankita Singh Gaur, Desta Z Fitiwi & John Curtis, "Heat pumps and our low-carbon future: A comprehensive review" (2021) 71 Energy Research & Social Science 1 at 1, DOI: https://doi.org/10.1016/j.erss.2020.101764 [Gaur et al].

¹⁵ BC Hydro, "Heat pumps", online: <<u>https://www.bchydro.com/powersmart/residential/tips-technologies/heat-pumps.html</u>> [<u>https://perma.cc/HJ48-HWSZ</u>].

¹⁶ Gaur et al, *supra* note 14.

¹⁷ City of Vancouver, "Heat pumps", online: <<u>vancouver.ca/home-property-development/heat-pump.aspx</u>> [https://perma.cc/YEY9-D5QU].

¹⁸ Government of British Columbia, Ministry of Environment and Climate Change Strategy, *Clean BC, Roadmap to 2030* (Victoria: Ministry of Environment and Climate Change Strategy, 2021)" at 17, 39-41, online (pdf):

<https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf> [https://perma.cc/VG3Y-MQA4].

¹⁹ Clean BC: Better Homes, "Enjoy year-round comfort with a \$6,000 heat pump rebate", online:

<https://www.betterhomesbc.ca/heatpumps/> [https://perma.cc/W5Y9-F96V].

²⁰ Moira Wyton, "Growing calls to extend B.C.'s heat-pump rebates to condos to keep vulnerable residents cool," *CBC News* (25 June 2023), online: <<u>https://www.cbc.ca/news/canada/british-columbia/condo-owners-heat-pumps-extreme-heat-1.6888316</u>> [https://perma.cc/74UY-A6PY].

²¹ Canada Energy Regulator, "Market Snapshot: Growing heat pump adoption – how does the technology work?" (2019) <<u>https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-growing-heat-pump-adoption-how-does-technology-work.html?=undefined&wbdisable=true> [https://perma.cc/748M-V4RM].</u>

²² United States Environmental Protection Agency, "Transitioning to Low-GWP Alternatives in Motor Vehicle Air Conditioning" at 2, online (pdf): <<u>https://www.epa.gov/sites/default/files/2016-12/documents/international_transitioning_to_low-gwp_alternatives_in_mvacs.pdf</u>> [https://perma.cc/3WFA-ZVZA].

passenger vehicles registered in the province.²⁴ Since air conditioning is a standard feature in most vehicles, it is reasonable to assume that the majority of these vehicles contain air conditioning units that use HFCs. While alternatives to HFCs in automobile air conditioners are in development, HFCs remain the most widely used chemical in automobile air conditioners.²⁵ Even if HFC use in automobile air conditioners declines, there will be a considerable legacy of HFCs in older vehicles that need to be safely recycled and disposed of.

4. LEGISLATION IN BC PERTAINING TO HFC DISPOSAL

BC's *Recycling Regulation* covers a variety of household appliances that contain HFCs and requires the creation of Extended Producer Responsibility ("EPR") programs to facilitate the recycling and disposal of the HFCs in these appliances.²⁶ However, heat pumps and automobile air conditioners are not captured by the *Recycling Regulation*; rather, they are regulated by the *Ozone Regulation*. This latter regulation defines "air conditioning or refrigeration equipment" to include heat pumps that contain HFCs, and "motor vehicle air conditioner" to include units that contain HFCs.²⁷

The Ozone Regulation prohibits the unauthorized release of HFCs from heat pumps and motor vehicles.²⁸ It also prohibits the disposal of a heat pump or motor vehicle air conditioner unless the HFCs are recovered as prescribed by the regulation.²⁹ To facilitate proper disposal, section 12 of the Ozone Regulation requires a seller of ozone depleting substances to create a recycling plan or participate in a stewardship program. Section 12 reads as follows:

12(3) A seller must

(a) prepare and retain at the seller's normal place of business a plan for accepting an ozone depleting substance returned for recycling, conversion or destruction, or
 (b) participate in a stewardship program.³⁰

12(4) A plan under subsection (3) (a) and a stewardship program under subsection (3) (b) must do all of the following:

(a) demonstrate how ozone depleting substances will be effectively collected and stored;

²⁴ Insurance Corporation of British Columbia, "Vehicle population" (2021), online:

<<u>https://public.tableau.com/app/profile/icbc/viz/VehiclePopulation-PassengerVehicles-2021/2021PassengerVehicles</u>> [https://perma.cc/7ZUQ-6YPG].

²⁵ UNEP Ozone Secretariat, "Fact Sheet 12: Mobile air-conditioning" (April 2015) at 3, online (pdf):

<https://ozone.unep.org/sites/default/files/2020-06/FS%2012%20Mobile%20air-conditioning%20final.pdf>

[[]https://perma.cc/2QXK-XYTU].

²⁶ *Recycling Regulation, supra* note 6.

²⁷ Ozone Regulation, supra note 2, s 1(1) (The regulation defines "air conditioning or refrigeration equipment" as "a heat pump or air conditioning or refrigeration equipment, other than a motor vehicle air conditioner, that contains or is intended to contain an ozone depleting substance or other halocarbon". The regulation defines "motor vehicle air conditioner" as "an air conditioning unit or system of a motor-powered vehicle, if that unit or system is driven by an engine and is a mechanical vapour compression refrigerant system that provides cooling for the passenger compartment of the vehicle and contains or is intended to contain an ozone depleting substance or other halocarbon.")

²⁸ Ozone Regulation, supra note 2, s 4(1).

²⁹ Ozone Regulation, supra note 2, ss 15, 18.

³⁰ Ozone Regulation, *supra* note 2, s 12(3).

(b) demonstrate how the returned ozone depleting substances will be disposed of in an environmentally responsible manner;

(c) provide for keeping records relating to returned substances.³¹

Although section 12 only refers to ozone depleting substances, section 3 clarifies that section 12 applies equally to heat pumps and motor vehicles containing HFCs.³²

An important question arises with respect to what entities are considered "sellers" for the purposes of section 12. In other words, who has the legal obligation to produce a stewardship plan or participate in a stewardship program? The regulation defines the term "seller" as "a person who sells an ozone depleting substance and includes, without limitation, **a retailer**, a supplier and a manufacturer" (emphasis added).³³ However, according to provincial authorities, this definition refers only to those companies that sell HFCs, and not the retailers who sell products containing HFCs to consumers.³⁴ In effect, this interpretation leaves automobile and heat pump retailers with no stewardship responsibilities for their products. Further, it is inconsistent with the *Recycling Regulation*, which defines "retailer" as "a person who sells or offers for sale a product **to a consumer**."³⁵

There is no basis for adopting different definitions of plain language words between the regulations. Moreover, this interpretation creates a situation where retailers of products containing HFCs captured by the *Recycling Regulation* (i.e., refrigerators) have HFC recycling obligations, whereas retailers of heat pumps and automobiles do not. The provincial government should interpret section 12 of the *Ozone Regulation* to apply to retailers who supply products to consumers that contain HFCs. This would ensure consistency between the two regulations and, most importantly, would ensure that all retailers who sell products containing HFCs have equal responsibility for end-of-life recycling and/or disposal.

5. LACK OF EVIDENCE OF HFC STEWARDSHIP PROGRAMS OR PLANS UNDER THE OZONE REGULATION

Under the *Recycling Regulation*, industry associations have developed stewardship programs for HFC recycling and/or disposal.³⁶ For example, the Major Appliance Recycling Roundtable ("MARR") is a non-profit stewardship agency that operates a stewardship program for major household appliances under the *Recycling Regulation*.³⁷ MARR publishes its stewardship plan and all relevant financial information

³¹ A person who contravenes section 12 is liable to a fine not exceeding \$200 000 (see *Ozone Regulation*, s 29(1).

³² Ozone Regulation, supra note 2, s 3 ("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").

³³ Ozone Regulation, supra note 2, s 1(1).

³⁴ Email from Jennafer Eisel, Environmental Management Analyst, Clean Air Environmental Standards Branch of the Ministry of Environment and Climate Change Strategy (6 June 2023) [Eisel Email].

³⁵ Recycling Regulation, supra note 6, s 1(1).

³⁶ *Recycling Regulation, supra* note 6.

³⁷ MARR, "About Us" (2023), online: <<u>https://www.marrbc.ca/about></u> [https://perma.cc/J7XZ-EY7U].

online. However, the agency does not facilitate end-of-life recycling for heat pumps or automobile air conditioners as these are excluded from the *Recycling Regulation*.³⁸

We could not find publicly available information on stewardship programs or plans for heat pumps and automobile air conditioners under section 12 of the *Ozone Regulation*. For this reason, we reached out to staff at the Ministry of Environment and Climate Change Strategy ("ECCS") to request more information.

In response, public servants at ECCS informed us that these products are not covered by a stewardship program, and that stewardship plans, as described in section 12(3)(a), are "not required to be submitted to the ministry so they are not public records until the ministry requests and receives them."³⁹ As a result, despite multiple requests, we were unable to confirm that stewardship plans for HFCs in heat pumps and automobiles exist. As such, we do not know how these HFCs are recycled in BC, if at all.⁴⁰

This lack of clarity on the plan for disposal of HFCs in heath pumps and automobiles is important because the systems for disposing these substances are complex. We understand that a federal industry association, Refrigerate Management Canada ("RMC"), is the only entity that manages collection sites for HFCs in BC. RMC then ships these HFCs to the United States as, at present, there are no functioning HFC disposal facilities in Canada.⁴¹ However, membership in RMC is only available to certain federally regulated HFC producers and users, and heat pumps and automobiles are excluded from these federal regulations.⁴² For all non-members, RMC charges fees in exchange for the collection of HFCs for safe disposal. Moreover, RMC will not accept HFC shipments in quantities less than 30 kilograms.⁴³ While we understand that provincial EPR programs such as MARR are explicitly designed to access RMC collection sites and pay the necessary fees,⁴⁴ we could find no evidence that HFCs in heat pumps and automobiles are being disposed of using RMC's services.

³⁸ MARR, "Accepted Products Reference Guide" (14 July 2021), at 6, online:

<<u>https://www.marrbc.ca/?AA=Download&AT=202&AD=80,DIFile></u>[https://perma.cc/T39K-DBVR].

³⁹ Eisel Email ("[a]t a heat pump's end-of-life, an approved person must conduct the removal of the HFCs using equipment and removal standards set out in Schedule B of the [Ozone] Regulations to prevent its release into the environment"); Email from James Nonen, Unit Head of Program Delivery under the Extended Producer Responsibility Branch of the Ministry of Environment and Climate Change Strategy (12 April 2023); Nonen Email (This must be done according to the Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems: see <<u>https://www.canada.ca/content/dam/eccc/documents/pdf/cepa/refrigerant-2015-errata-eng.pdf}>.</u>

⁴⁰ As per the Nonen Email, there does appear to be information with respect to the technical question of the standards for HFC removal ("[a]t a heat pump's end-of-life, an approved person must conduct the removal of the HFCs using equipment and removal standards set out in Schedule B of the [Ozone] Regulations to prevent its release into the environment"). We also understand that this must be done according to the Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems, see Government of Canada, Environment and Climate Change Canada, *Environmental Code of Practice for the elimination of fluorocarbon emissions from refrigeration and air conditioning systems* (2021), online (pdf): <<u>https://www.canada.ca/content/dam/eccc/documents/pdf/cepa/refrigerant-2015-errata-eng.pdf</u>>.
⁴¹ Interview of Kathleen O'Malley (RMC) and Nancy Larsen (RMC) by Charis Kamphuis and Lydia Young (10 November 2022) [Interview with RMC]; Interview of Chris Campbell (MARR) and Michael Zarbl (MARR) by Charis Kamphuis and Lydia Young (24 November 2022) [Interview with MARR].

⁴² For these exclusions, see 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: <<u>https://gazette.gc.ca/rp-pr/p1/2016/2016-05-21/html/sup2-eng.html</u>>.
⁴³ Interview with RMC, supra note 41.

⁴⁴ Interview with MARR staff, *supra* note 41.

As indicated, provincial ECCS public servants confirmed that there is no requirement to make stewardship plans pertaining to heat pumps or automotive air conditioners public. Therefore, there appears to be a lack of transparency from the provincial government regarding compliance with section 12 and the end-of-life management and disposal of HFCs in these products. There also appears to be a serious lack of oversight of section 12 compliance on the part of ECCS authorities. Given that there is no mandatory requirement that sellers provide their stewardship plans to ECCS officials, there is no discernible consistent monitoring of the quality of these plans and whether they are being effectively implemented.

6. A MINISTERIAL INQUIRY INTO HFC RECYCLING AND DISPOSAL UNDER THE OZONE REGULATIONS IS NECESSARY

Section 113(1) of the EMA states that if the Minister of ECCS considers it necessary, the Minister may:

- (a) order an inquiry with respect to the environment, and
- (b) appoint a person to conduct the inquiry.⁴⁵

The Minister should conduct an inquiry into compliance with section 12 of the *Ozone Regulation*, and in particular the disposal of HFCs found in heat pumps and automobile air conditioners. We could not find evidence or ascertain confirmation that HFC end-of-life plans exist for these products, and there is no provincial stewardship program for these sectors in BC. Moreover, as described in Part 3, the Ministry's inconsistent interpretation of the term "seller" under the regulation is problematic. Without an inquiry, it is not possible for the public to determine whether heat pumps and automobiles are complying with the *Ozone Regulation*. This is a major environmental issue given the sheer volume of automobiles with HFCs in BC, and the province's decision to facilitate a major expansion of the use of heat pumps.

Additionally, the inquiry should investigate the possibility that there are other HFC products in BC that are not currently covered by an existing stewardship program or plan. It is urgent that programs be created to ensure that all HFC products in circulation in the province are properly recycled and disposed of. Effective regulation of HFC recycling and disposal is essential for the provincial government to meet its climate commitments to reduce greenhouse gas emissions by 40% below 2007 levels by 2030, and to 80% below 2007 levels by 2050, as outlined in section 2(1) of the *Climate Change Accountability Act*.⁴⁶

In addition to the inquiry described here, the Minister should consider initiating, along with government, industry, and civil society partners, a fulsome halocarbons strategy for the province. In this letter we have focused exclusively on the apparent problems with HFC disposal for heat pumps and automobile air conditioners. However, we understand that there is also work to do to ensure that new equipment uses low global warming potential ("GWP") HFCs, so they are aligned with BC and Canada's international obligations. Thus, a fulsome halocarbon strategy would properly regulate and require low GWP HFCs

⁴⁵ EMA, supra note 3 at s 113(1).

⁴⁶ Climate Change Accountability Act, SBC 2007, c 4, ss 2(1) (a.1), 2(1)(b).

across all cooling devices and appliances, as well as robust end-of-life disposal plans and programs for all products that rely on HFCs.

7. CONCLUSION

In this letter, we have conveyed our serious concerns about a potential lack of compliance with section 12 of the Ozone Regulation for heat pumps and automobile air conditioners containing HFCs, as well as a lack of transparency and oversight with respect to the extent to which compliance is being achieved, if at all. HFCs are a potent greenhouse gas. There are large climate risks associated with ineffective regulation of safe HFC disposal for millions of automobiles in BC, and an ever-growing number of heat pumps. As such, it is certainly in the public interest for you to order an inquiry into this matter under section 113(1) of the EMA.

We would be happy to correspond with you further and address any questions. We look forward to hearing back from you.

Sincerely,

Charis Kamphuis Dr. Charis Kamphuis, ELC Lawyer

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