August 31, 2019

Madame France Delisle, directrice générale
Direction générale de la réglementation carbone et des données d'émission
Ministère de l'Environnement et de la Lutte contre les changements climatiques
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Via electronic mail: france.delisle@environnement.gouv.qc.ca

Subject: HRAI/AHRI Comments regarding Proposed Regulation to Amend the Regulation respecting Halocarbon

Dear Mme Delisle,

We are writing to you on behalf of the members of the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) and the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). HRAI is a national trade association of manufacturers, wholesalers and contractors in the Canadian heating, ventilation, air conditioning and refrigeration (HVACR) industry. HRAI has over 1,300 member companies who provide the products and services for indoor comfort and essential refrigeration processes. AHRI is a trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. With more than 300 members, AHRI is an internationally recognized advocate for the HVACR industry and certifies the performance of many of the products manufactured by its members. In North America, the annual output of the HVACR industry is worth more than $20 billion. AHRI members employ more than 130,000 people and support another 800,000 dealers, contractors, and technicians in North America.

HRAI and AHRI have been working for more than a decade to support regulations to reduce the consumption and production of HFCs. Our members strongly supported the agreement to amend the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down HFC production and consumption as a proven, predictable, and practical approach far more desirable than a patchwork of regulations to address this important climate issue. We demonstrated that support in our work with parties, environmental non-governmental organizations (E-NGOs) and other stakeholders around the world even sharing information regarding transitions with local industries to encourage a positive outcome.

We are also working, together with our E-NGO partners, with the eight Climate Alliance states that have announced an intent to regulate HFCs in the United States. It is our goal to help states and provinces in the adoption and implementation of laws and regulations in a consistent manner that can be practically implemented to meet the greenhouse gas reduction objectives while still providing critical benefits to society preserving food and medicine and providing, in some cases, life-saving comfort cooling. If states and provinces act in an independent manner, it will result in a patchwork of policy requirements which will limit end-user choice and significantly increase end-user cost and sub-optimize industry supply chains.

Although we respectfully request that several issues be addressed in the proposed regulation, some of the most critical concerns follow.

- **No refrigerants for air conditioning are enabled for new air conditioning systems in the equipment types described in Section 18 after 2021.**
- **Many commercial refrigeration systems types have no refrigerants available after 2021.**
- **Manufacturing facilities could not continue to produce equipment compliant with regulations in other jurisdictions for export.**

We appreciate the opportunity to comment on behalf of HRAI's and AHRI's members in response to July 17, 2019 proposed revisions to Q-2 R. 29. As we have engaged in this conversation late in the process having only learned about the proposed regulation this month and we understand that the Ministry is unable to extend the comment period, we also greatly appreciate the opportunity to have telephone and in-person discussions with the Ministry of the Environment and the Fight Against Climate Change on August 22nd and in-person on August 29th, 2019. We respectfully request the opportunity to continue this dialogue with the Ministry through an official Working Committee and by meeting directly with the Minister regarding this important issue.

Air Conditioning Systems

In Division II, Section 21.2, the draft regulation states:

Section 21.2. *No person may manufacture, sell, distribute or install any of the following units as of the dates indicated below:*

> *(1) 1 January 2021, in the case of a unit referred to in paragraph 2, 3 or 4 of section 18 and designed to work with an HFC having a global warming potential (GWP) of more than 1,500;*

Section 18

(2) refrigeration or air conditioning units having a power rating of less than 4 kW used for commercial, industrial or institutional purposes
(3) refrigeration or air conditioning units having a power rating equal to or greater than 4 kW and less than 20 kW used for commercial, industrial or institutional purposes;
(4) refrigeration or air conditioning units having a power rating equal to or greater than 20 kW

As the proposed regulation is written, there would be no refrigerants for air conditioning allowed in the building codes for new equipment in the equipment types described in Section 18.

Safety Standards and Building Codes

There are no non-flammable refrigerant ASHRAE-listed blends below 1500 GWP to replace R-410A (which is nearly universally used in most of the air conditioning equipment described in Section 21.2).

There are several refrigerants with GWPs lower than 750 that are available commercially, the lead refrigerant candidates are classified as A2L (mildly flammable) but these refrigerants cannot be used yet because safety standards have not been updated and adopted into building codes. In order to enable the use of lower flammability refrigerants (ASHRAE Classification A2L), the process to update CSA 52-2019 (equivalent to ASHRAE 15) which currently does not allow flammable refrigerants over 3kg and CSA 60335-2-40 edition 2 does not allow flammable refrigerants and then they must be adopted into building codes. The adoption of safety standards into building codes can take several years.

Harmonization and Compliance Testing

We understand that the Minister's stated intent when proposing this amendment was to harmonize with other governments. Harmonization eliminates development cycles that add cost (approximately $100,000 USD per equipment type per manufacturer) which is ultimately assumed by end-users. It also insures that required safety and energy efficiency testing and certification can be completed in laboratories that are fully scheduled through the next four years to address energy efficiency and other regulatory transitions. The timing from designing a product to commercialization normally takes approximately three to five years for different companies depending on the company capability to complete design work, prototype testing, energy efficiency and safety testing to meet certification requirements. This especially impacts smaller companies with limited engineering and testing resources with multiple coincidental transitions underway.

Unfortunately, the proposed regulation will actually de-harmonize regulations across - Canada and globally which will significantly impact the ability for manufacturers to

comply with these regulations. There are multiple regulatory changes happening in the next five years including energy efficiency standards as well as transitioning to lower GWP refrigerants. Inconsistent regulations will increase cost to end-users and take time to develop, test and certify equipment these requirements. For example, the timing of prohibitions for air conditioning are not aligned with energy efficiency requirements in 2023 nor are they aligned with the building code adoption cycle in 2024 nor are they aligned with proposed transition timing in California.

In addition, adoption of highly efficient HVAC technology (such as ductless units and variable refrigerant flow systems) with 30-40% annual energy savings offered over baseline technologies would also be negatively challenged by the proposed refrigerant transition timeline 2021. Such technology is reducing annual energy consumption levels and associated greenhouse gas impact (replacing electric baseboard heating, less efficient heat pumps, chillers or boilers). Even if a significant proportion of the energy base in the Province of Quebec is based on hydro electric energy source, the reduction in annual energy offered by such technology can be used to help offset other more carbon intensive energy consumers.

HRAI and AHRI respectfully request that development and testing time, adoption of safety standards into building codes and harmonization with other regulations be considered in the proposed regulations and that the determination of a transition date for air conditioning be delayed until a more robust discussion takes place with stakeholders regarding ability to comply with transition timing.

HRAI and AHRI will provide more technical information by mid-September after further review of the Montreal, Quebec and the Canadian National building code safety standard adoption process and certification requirements in greater detail to provide Quebec a means to meet its regulatory requirements while minimizing negative impacts to consumers, and manufacturers.

Impact of Labor and Economics

HRAI and AHRI are working with member companies to determine the impact to companies operating within Quebec. More information will be provided by mid-September. To date, several hundred positions have been identified as being at risk if the regulation is implemented as written.

Manufacturing

In several sections the proposed regulation prohibits the manufacture of equipment using refrigerants above a specific global warming potential (GWP). We have been told by member companies that limiting the manufacture of equipment to be “exported” to other provinces or the United States would cause some of them to close their operations in Quebec where they have made significant investments and employ

thousands and move those investments elsewhere. In other cases, such as for commercial refrigeration equipment, the manufacturer may have no way of knowing what refrigerant will ultimately be used in their equipment as the design and manufacture can be the same for multiple alternatives.

HRAI and AHRI respectfully request the removal of the prohibition on manufacturing equipment for specific refrigerants within Quebec.

Commercial Refrigeration Limits

In Division II, Section 21.1, the draft regulation states:

21.1 It is prohibited, as of Jan. 1, 2021 to install a refrigeration unit using an HFC and used to preserve food in a commercial, industrial establishment that has the following characteristics: (1) its area is more than 929 square meters

It is not clear that this proposed prohibition applies only to new, greenfield supermarket buildings as discussed in our stakeholder meeting on August 22nd. As we discussed, hospitals, convenience stores, restaurants and other types of businesses will likely be unable to comply with this restriction as lower GWP solutions have not been enabled through safety standards and building code changes.

In addition, there are at least three potential challenges in the replacement of equipment in existing facilities with non-HFC equipment. In many cases there are space restrictions. In some cases, there are requirements for very low discharge temperature because of inability to remove exhaust heat. Finally, requirements for replacement of equipment could result in mixed systems causing a store to try to manage multiple refrigerants in systems that may then be sub-optimized operationally and from an energy consumption perspective.

The proposed regulation does not allow for the use of lower GWP HFC options that will only be available after safety standards and codes are upgraded in approximately 2024. In July 2019, AHRI requested that Underwriters Laboratories (UL) upgrade the safety standard for commercial refrigeration, CSA/UL 60335-2-89, to allow for the use of refrigerants with GWPs below 300.

HRAI and AHRI respectfully request that the Ministry clarify the limitation as follows:

21.1 It is prohibited, as of Jan. 1, 2021 to install a refrigeration unit using an HFC or HFC blend with a GWP greater than 150 GWP to preserve food in a new "greenfield" grocery store or a building that will become a grocery store where all new equipment is being installed that has the following characteristics: (1) its area is more than 929 square meters and the system contains a refrigerant charge greater than 140 kilograms

HRAI and AHRI respectfully request that the limitation to new greenfield grocery stores be clarified and if further action is taken that the development and testing time, adoption of safety standards into building codes and harmonization with other regulations be taken into account in the proposed regulations and that the determination of a transition date for commercial refrigeration be delayed until a more robust discussion takes place with stakeholders regarding ability to comply with transition timing.

HRAI and AHRI will provide more technical information by mid-September after further review of the Montreal, Quebec and Canada building code safety standard adoption process and certification requirements in greater detail to provide Quebec a means to meet its regulatory requirements while minimizing negative impacts to consumers, and manufacturers.

Finally, HRAI and AHRI suggest that requirements limiting the allowed GWP for refrigerants used to service existing equipment (e.g. limiting GWP to 1500 for medium temperature commercial refrigeration equipment) may reduce GWP impact by far more than some of the other options described in the proposed regulation. AHRI will provide more information by mid-September.

Chillers and Very Low Temperature Refrigeration Systems

There are many applications where smaller process chillers are located in areas that would not allow for low GWP flammable solutions (e.g. occupied manufacturing floor etc). There are other applications where chillers are used to cool medical equipment or chillers are used to cool saline in an operating rooms or MRI machines where low GWP alternatives have not yet been identified.

There are unique and custom applications for very low temperature refrigeration for cryogenic cooling, blood banks and other uses that may not be able to effectively meet societal needs with lower GWP refrigerants.

HRAI and AHRI respectfully request that the Ministry include an exemption process as there is at the federal level for these special uses to address the needs of these unique applications with very small emissions footprints.

Idled equipment for 30 days

In section 10, the draft regulation notes that

10.1. *The owner of a refrigeration or air conditioning unit for a use other than domestic and whose total charge is at least 30 kg must, as soon as possible, recover the halocarbon contained therein in the following cases:*
(1) the operation of the unit is interrupted for a period longer than 1 month, such as the winter period;

(2) the unit is no longer working or is defective but not repaired within 1 month of the day the problem is found

HRAI and AHRI fully support the Minister's efforts to reduce emissions from idled equipment. However, sealed systems are not emissive and the process to remove refrigerant from these systems and to purge them would result in unnecessary emissions. However, it is a best maintenance practice to remove refrigerant from an open-type compressor system when it is idled for a long period of time.
There are many seasonal systems that are sealed in use for agriculture, ice rinks and other sectors where systems are shuttered for longer than a month every year, and there are likely an insufficient number of cylinders and tanks certified for storage in the province to accommodate this proposal.

HRAI and AHRI respectfully request that the Minister limit the requirement to remove refrigerants from equipment that is idle for more than thirty days to open compressor systems.

Sell-through period

The draft regulation requires transitions take place to prevent the installation of equipment rather than limiting the date of manufacture. This could create stranded equipment as the federal government limits the date of manufacture.

HRAI and AHRI recommend that the date of manufacture be used to harmonize with the process used for federal HFC regulations and energy efficiency regulations.

Definition of reclaim

EPA definition (40 CFR Part 82, Subpart F under Section 608 of the Clean Air Act):
Reclaim means to reprocess recovered refrigerant to the specifications in appendix A of this subpart (based on AHRI Standard 700-2016, Specifications for Refrigerants) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in section 5 of appendix A of this subpart

HRAI and AHRI recommend that the Ministry harmonize with this internationally used definition of reclaimed refrigerant.

Section 43: provides
"Only persons having the qualifications required under section 44 may install, service, repair, modify, dis- mantle or recondition a refrigeration or air conditioning unit designed or converted to operate with a halocarbon or treat, charge, transfer or purge the halocarbon charge of such a unit."

This seems that it may to prohibit companies from the US from providing recovery services within the province even if they had all required USEPA certifications and equipment. Particularly for larger systems, if such services are unavailable from companies located within the province, this would prevent compliance with the other maintenance and leak repair rules in the regulation.

HRAI and AHRI respectfully recommend that a provision be added subject to Environment Canada approval (which is the current requirement) US companies with the proper certification should be able to perform such work within the province.

Section 54 provides:
"Any person who has recovered a halocarbon from a unit and is unable to treat it must, not later than 45 days following the date on which the bottle used for the recovery of the used halocarbon is filled to its maximum capacity, bring it
(1) to the supplier or any other halocarbon wholesaler; or
(2) to any other person authorized to treat it under the Environment Quality Act (chapter Q-2)."
As drafted, this would seem to prohibit sending the refrigerant to a US EPA certified reclamation facility for "regeneration" since it would not be an approved person authorized under Chapter Q-2. Regardless, the 90 day period may not be sufficient for a wholesaler or distributor to accumulate sufficient quantities to economically justify sending out the refrigerant to be treated. Also, there may not be sufficient resources in Quebec that would provide wholesalers with a viable option for sending used halocarbon refrigerants to be "treated". If wholesalers and distributors have no practical outlet for used gas, it may create a financial hardship to have the gas destroyed or, worse yet, encourage illegal venting of all used halocarbons.

HRAI and AHRI respectfully recommend that the time limit be eliminated from Section 54 to allow enough time to accumulate sufficient refrigerant for economical processing.

Leak Testing

Leakage refrigerant is a significant issue globally and leak prevention as well as leak rate limits should apply to all systems, regardless of refrigerant type (fluorocarbons and other refrigerants). because of impact on direct emission from the refrigerant as well as efficiency loss from insufficient charge.

HRAI and AHRI suggests that leak rates follow national maximum leakage rate allowances, systems should be checked 1 time per year and if systems are not in compliance with maximum allowable leakage rates, then testing at 4 times per year will be required until compliance is shown for a period of time. We are also suggesting that "smart purge" systems be exempt from this requirement

Cylinder color

AHRI Guideline N: *Assignment of Refrigerant Container Colors*, specifies that all refrigerant containers should have one uniform paint color and that existing individually assigned container paint colors should be transitioned to that color by 2020.

As written, Section 53:
A person who has in his or her possession a container that has been used to market a halocarbon other than methyl bromide must return it, after use, to the supplier or to any other halocarbon wholesaler that sells or distributes halocarbons of the same type or if the colour of the container makes it possible to identify the halocarbon it contains. The supplier or wholesaler must then treat the halocarbon or deliver it to a person referred to in subparagraph 1 or 2 of the first paragraph of section 54 for treatment." at the end of the third paragraph

Interpretation, Section 53:

A person who possesses a container that has been used to market a halocarbon other than methyl bromide must return it, after use, to the supplier or to any other halocarbon wholesaler that sells or distributes halocarbons

(i) of the same type; or

(ii) if the colour of the container makes it possible to identify the halocarbon it contains.

The supplier or wholesaler must then treat the halocarbon or deliver it to a person referred to in subparagraph 1 or 2 of the first paragraph of section 54 for treatment."

HRAI and AHRI recommend that language be added to clarify that this color-coding is optional or that the language be removed to harmonize with other regulations.

<u>Sell-through period/Date of Manufacture</u>

HRAI and AHRI respectfully requests that the Quebec Ministry align with Environment and Climate Change Canada to apply regulations based on date of manufacture rather than date of installation.

<u>Definition of Refrigeration or Air Conditioning</u>

HRAI and AHRI respectfully request further discussion and clarity as to the definition and scope of the regulation as the current regulation may include systems that are not yet ready for transition.

<u>Labeling and CSA 22.2</u>

Section 17.1 of the proposed regulation requires that the owner of a refrigeration or air-conditioning unit must ensure the equipment is labeled with the CO2 equivalent units of the refrigerant based on GWP and charge size. This may be challenging for building owners to comply with.

HRAI and AHRI recommend that the requirement be removed as the information would be available to the government to determine this value if needed and it may be difficult for building owners to determine this value.

HRAI and AHRI greatly appreciate the opportunity to provide these comments. We look forward to further engagement with the Ministry to provide additional technical information to resolve these important issues and provide suggestions where additional reductions in emissions might be more impactful. Due to the significant potential economic losses that our members would face should this regulation pass as written, we are very keen to meet with the Minister and participate in a working committee to assist your team. Should you have any questions regarding this submission, please contact Helen Walter-Terrinoni [hwalter-terrinoni@ahrinet.org (302) 598-4608] or Caroline Czajko [cczajko@hrai.ca (416)562-5875].

Respectfully,

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