



**SUBMISSION TO SENATE SELECT COMMITTEE ON
PFAS (PER AND POLYFLUOROALKYL SUBSTANCES)**

December 2024

Who We Are

Refrigerants Australia

Refrigerants Australia, formed in 1989, is the peak organisation representing the supply chain of refrigerants both in bulk and in equipment. Its members include bulk refrigerant importers representing over 95% of all refrigerants sold in Australia, AREMA (equipment importers and manufacturers), Australia Refrigerant Wholesalers Association, several contractor organisations representing people on the tools using refrigerants, and Refrigerant Reclaim Australia, Australia's award winning refrigerant recovery organisation.

Refrigerants Australia is committed to:

- Reducing the environmental footprint of all refrigerants
- Improvements in energy efficiency in refrigeration and air conditioning equipment
- Safety of all refrigerants
- Preparing industry for a low emissions future
- Encouraging government regulation that delivers environmental benefits.

Air Conditioning and Refrigeration Equipment Manufacturers Association

Established in 1967, AREMA (Air-Conditioning & Refrigeration Equipment Manufacturers Association of Australia) represents the interests of air-conditioning and refrigeration equipment manufacturers active in the Australian market. We work with government and industry on policy formulation and regulation to achieve the best outcomes for our members and the wider community.

AREMA's aims are to:

- Help reduce the environmental footprint of air conditioning, heat pumps and refrigeration in Australia.
- Encourage members to design and manufacture energy efficient equipment.
- Encourage our members to deliver real energy savings to consumers.
- Reduce ozone depleting substances (ODS) and greenhouse gases in a safe and controlled manner.
- Work closely with government to ensure the safe implementation of standards that will benefit end users and product designers.
- Work with other local and global associations to ensure we adopt world's best practice.
- Provide a unified voice for representation to government and industry on key issues.
- Represent the air conditioning and refrigeration industry on key standards committees and, where possible, assist members to interpret these standards.

1. Overarching Point

Refrigerants Australia and AREMA agree that PFAS chemicals must be regulated because of their environmental and health impacts and their bio accumulative properties. One issue regulating PFAS chemicals is defining what PFAS chemicals are. It is unclear how PFAS chemicals are defined or will be defined, but it is imperative that the Senate committee is aware that a variety of chemicals and materials that can potentially fall under the title of 'PFAS chemicals' may not all contain the same environmental and health risks. Consideration also must be given to the role PFAS and PFAS-like substances play in maintaining lives and a modern economy. In considering approaches to managing PFAS, exceptions will need to be considered for essential products and means to allow continued use with measures to reduce environmental releases.

2. Uncertainty

This submission notes that there remains significant uncertainty about the definitions of PFAS and what substances need to be included in any proposed regulatory response. The leading regulatory push globally is driven by the European Chemical Agency -EU Reach. Given the high technical complexity of the issues involved, they have advised that they will not have recommendations for European governments to consider until at least 2029. Further, they have already flagged several areas where PFAS chemicals are essential, and their use will be required to continue to maintain lives and livelihoods.

Additionally, the Environmental Effects Assessment Panel (Montreal Protocol) 2022 Assessment Report unequivocally cited a common agreement among the majority of experts that "all PFAS should not be grouped together, persistence alone is not sufficient for grouping PFAS for the purposes of assessing human health risk, and that the definition of appropriate subgroups can only be defined on a case-by-case manner" and that "it is inappropriate to assume equal toxicity/potency across the diverse class of PFAS".

We further note the significant uncertainty remaining about those substance potentially linked with refrigerants and components used in refrigeration and air conditioning systems. The submission particularly recommends that these materials containing PFAS chemicals should be excluded from broad overarching reform relating to the international best practices for the environmentally sound management and safe disposal of PFAS. Additionally, they should be excluded from general legislative, regulatory, public health and other policy measures to prevent, control and manage the risks of PFAS to human health and the environment, including the phasing out of these harmful substances.

Secondarily, this submission recommends that if PFAS chemicals that are used within refrigerant technology are included in the broad regulation of PFAS chemicals, that there be specific regulations to account for the nature of these chemicals as components within complex equipment.

3. TFA

TFA or 'trifluoroacetic acid' is the product that can occur from the degeneration of Hydrofluorocarbons (HFCs) and Hydroolefins (HFOs), which are fluorinated gases used in refrigeration technology. Furthermore, TFAs may not, depending on the definition, be included as PFAS. For instance, the US EPA in its National PFAS Testing Strategy concluded that TFA is a "well studied non-PFAS". However, as some definitions of the term 'PFAS' are included within definitions, they are treated as a potential type of PFAS that may be subject to regulation for the purposes of this submission.

There is contradicting arguments as to whether TFA concentration poses a threat to human health or the environment, or whether there is concern that the concentration could pose this threat. Some studies present TFAs as having a magnified negative health and ecological effect and suggest that the increase in the concentration of TFAs in the environment is irreversible. Others, however, reinforce the findings that the majority of TFA concentration in the environment is due to the natural causes and that assuming TFA concentrations are irreversible is incorrect. Furthermore, the current concentrations of TFAs are well below the threshold of being dangerous to health or the environment and projected to remain so for the foreseeable future.

It is also important that TFA being released from refrigeration technology only amounts for a miniscule input into broad TFA concentration, with larger sources being the natural causes and industrial inputs.

4. Fluoropolymers

PFAS chemicals, fluoropolymers, are also used in components within refrigeration technology due to their water resistant or flame retardant properties. These attributes are essential in delivering safe, energy efficient and low emissions services to the community. There are currently no replacement substances available.

Additionally, although these materials are classified as PFAS chemicals, they have a large molecular weight which means that they are stable and present only a low concern to human health. The Senate committee should consider, if recommending that fluoropolymers used refrigeration equipment are included in broad regulation, propose providing an exception for regulation of materials that contain less than 0.1 PFAS by weight. Given that most quantities of PFAS in refrigerant equipment is extremely minimal, this would account for the low risk and the high challenge of regulating complex goods. It is also imperative that, if significant regulation of fluoropolymers occurs, that the refrigerant industry be afforded adequate time to identify PFAS chemicals in components of their technology and to establish mechanisms to track these chemicals.

Because TFA and fluoropolymers have a low impact on human health and the environment, not including these materials within strict umbrella regulating or phasing out of PFAS chemicals would not negatively pose a significant risk to the population or environment. Furthermore, using these materials within refrigeration equipment provides notable benefits to public and environmental health.

5. HFO Refrigerants are essential for net zero

HFO and HFC-HFO blends are innovative gases that dramatically and safely reduce the impact of refrigerant emissions into the atmosphere (in CO₂-e terms) and improve energy efficiency of refrigerant technology. Use of HFOs and HFO-HFC blends have also helped avoid the potential release of hundreds of millions of metric tons of CO₂ from the atmosphere since their commercialization in the early 2010's.

Not only do modern refrigerants improve the energy efficiency of Australian homes and businesses, but they also reinforce the phasing out of HFCs and ozone depleting substances. If HFO and HFO blends were to be include in a broad PFAS phase out, this would reinforce reliance on the less efficient HFCs, which would act to reverse Australia's progress in reducing greenhouse gas emissions and repairing the ozone layer.

Manufacturers have a range of refrigerant choices – some of which do not include PFAS. However, these gases all have issues including extreme flammability, toxicity (leading to rapid incapacity or death), or very high pressure. Additionally, reducing risks from any of these refrigerants typically leads to increased costs (sometimes very significantly) and reductions in energy efficiency. Quite simply, there are no magical solution for the perfect refrigerant and industry needs all potential solutions to continue to reduce refrigerant emissions by 85% of 2010-2014 levels by 2036 in a way that is safe and delivers energy efficiency improvements.

Finally, Australia has the world-leading example of lifecycle refrigerant management, which controls refrigerants from import through to end-of-life. There is significant policy and regulatory means in place that ensures that fluorinated gasses are only sold to registered technicians who are trained to install these gasses so that there is minimal leakage into the atmosphere. Furthermore, there is regulation surrounding the end of life of equipment to ensure that refrigerant is disposed of properly and does not escape into the environment. At present, however, these requirements do not include all refrigerants (only high GWP HFCs and ozone depleting substances).

Industry has long argued that the regulatory regime should include all refrigerants to ensure their safe and proper use and limit any potential releases to the atmosphere. If this was pursued, this would be a practical step to further minimize any potential consequences related to PFAS, safe use of all refrigerants, and greenhouse gas emissions. We would appreciate the opportunity of discussing this further with the Senate Committee.

6. Contacts

Refrigerants Australia is ready to support the Senate Committee in its deliberations. Please feel free to contact us for more information at:

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