Green Building Council Australia

Building a sustainable future

23 October 2026

Industrial Chemicals Environmental Management Section
Department of Climate Change, Energy, the Environment and Water

Via email: ichems.enquiry@dcceew.gov.au

Dear Industrial Chemicals Environmental Management Section

RE: Proposed standards for management of industrial chemicals under the Industrial Chemicals Environmental Management Standard

The Green Building Council of Australia (GBCA) welcomes the opportunity to provide feedback on the scheduling chemicals under the Industrial Chemicals Environmental Management Standard (IChEMS). This submission focuses primarily on proposed Schedule 4 chemicals, hydrofluoroolefin (HFO) refrigerants.

GBCA's position is informed by extensive engagement with industry stakeholders in developing the discussion paper, Freeze Frame: Refrigerants as long-term infrastructure, released in partnership with the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH). Driving the transition to low-impact heating, refrigeration and air conditioning systems across Australia's built environment is a key element of the GBCA's Climate Positive Roadmaps[1] which set out a pathway to net zero buildings and precincts and beyond and are embedded in the Green Star rating tools.

The management of refrigerant chemicals, including how HFOs are scheduled, will have consequences for the whole supply chain, not just the manufacturers and suppliers. Building owners will bear the long-term impacts, risks and liabilities of choices made today.

GBCA urges Department of Climate Change, Energy, the Environment and Water (DCCEEW) to ensure that consultation for proposed standards includes stakeholders from the whole supply chain, including building owners and those supplying services for maintenance, upgrades, recovery and destruction, to ensure a wider range of potential risks and impacts is well understood before policy decisions are finalised.

GBCA recommends a stronger regulatory approach for HFO refrigerants which prioritises the precautionary principle, the inclusion of packaged units and greater transparency in product stewardship. These are critical elements for ensuring a successful and safe transition to net zero.

About GBCA

GBCA's purpose is to lead the sustainable transformation of the built environment. We do this primarily through our core functions:

- We advocate policies and programs that support our vision and purpose.

[1] Developed in close consultation with industry and government, GBCA's Climate Positive Roadmaps plot the steps required to decarbonise new and existing buildings and precincts and set a path to a climate positive built environment by 2050. https://new.gbca.org.au/green-star/green-star-strategy/carbon-climate-change/#carbonpositive

- We rate the sustainability of buildings, fitouts and communities through Australia's largest national, voluntary, holistic rating system – Green Star.
- We educate industry, government practitioners and decision-makers, and promote green building programs, technologies, design practices and operations.
- We collaborate with our members and other stakeholders to achieve our mission and strategic objectives.

Green Star is Australia's most widely used sustainability rating system for the design, construction and performance of buildings – including social infrastructure – fitouts and communities. Green Star aims to transform the built environment by:

- reducing the impact of climate change
- enhancing our health and quality of life
- restoring and protecting our planet's biodiversity and ecosystems
- driving resilient outcomes for buildings, fitouts, and communities
- supporting and rewarding the development and use of sustainable products and materials
- contributing to market transformation and a sustainable economy.

Managing the lifecycle risks of HFOs

Through our work on refrigerants, GBCA has engaged with consultants, contractors, building owners, facility managers, policymakers, equipment manufacturers, refrigerant suppliers and researchers to better understand the technical, environmental and stewardship challenges associated with different refrigerant classes.

Refrigerants are used extensively within the built environment. Buildings rely heavily on stationary refrigerants in chillers, heat pumps, and other specialised electrical equipment. They are also present in other settings, such as consumer refrigeration systems, packaged units, and other appliances.

While equipment selection drives the choice of refrigerants used in buildings, once embedded winding down their use becomes a long-term challenge. Even with strong regulation, such as that previously introduced for high ozone depleting and high global warming chemicals, the ubiquity of refrigerant chemicals and our reliance on them means that curtailing the use of classes of refrigerants is complex, challenging and slow.

Taking a more precautionary approach now to HFOs will help to limit exposure to future risk.

Experience with fluorocarbon refrigerants over recent decades shows that lighter regulatory oversight has not delivered effective stewardship, recovery, reclamation and destruction of refrigerants. The treatment of HFO refrigerants should build on this experience.

Despite Australia's hydrofluorocarbon (HFC) phase-down, licensing arrangements and industry codes, significant quantities of HFC refrigerants continue to be emitted through equipment leakage, servicing losses and at end of life, while substantial quantities of refrigerant remain in equipment when it is retired.[2] HFOs are often promoted as a lower-GWP alternative, but all refrigerant classes share similar management challenges.

Without the right regulatory and policy settings, GBCA is concerned these shortcomings will be repeated with HFOs. Building owners who bare the long-term responsibility and risk of maintain and replacing refrigerant-based equipment, tend to rely on appropriate regulations, incentives and policy frameworks so that all refrigerant classes are well managed from import to disposal, avoiding ongoing environmental and

[2] DCCEEW & Expert Group. (2024). Cold Hard Facts 4. https://www.dcceew.gov.au/sites/default/files/documents/cold-hard-facts-4.pdf

human health liabilities. Poor regulation will result in building owners not having the choice to make better decisions.

HFOs are currently proposed as Schedule 4 chemicals. GBCA strongly supports the application of a higher scheduling category to HFO refrigerants to Schedule 5. The emerging evidence of toxicity of HFO degradation products, trifluoroacetic acid (TFA), as being reproductively toxic with high mobility and high persistence justifies urgent regulation. While IChEMS is not intended to manage risks to human health, the combination of potential serious impacts on both human health and the environment justifies regulation consistent with Schedule 5.

A Schedule 5 listing will provide stronger guardrails for managing synthetic refrigerants effectively and safely. GBCA notes that the regulatory response should be proportionate not only to the intrinsic properties of HFO refrigerants, but also to the real-world likelihood of environmental release throughout importation, use, servicing, recovery and destruction.

Lessons from Freeze Frame and industry consultation

A lesson emerging from GBCA's Freeze Frame consultation process is that refrigerant stewardship should remain a priority area of focus for Australia's refrigeration and air conditioning sector, with appropriate regulation and support from government. Stakeholder engagement undertaken for the Freeze Frame project identified broad support for emissions reduction objectives. Also, stakeholders noted concerns raised relating to management of refrigerants of all classes include:

- absence of clear market signals for viable alternatives or a long-term roadmap to enable appropriate decision-making,
- potential of the local market to be flooded with products restricted from other developed markets due to stronger regulation
- refrigerant leakage across building and equipment lifecycles,
- insufficient transparency around the recovery and destruction of refrigerants at equipment decommissioning,
- poor awareness among building owners and operators regarding long-term refrigerant risks.

Long-term impacts for the built environment

The issue of refrigerant chemical management is particularly significant within the built environment. Building owners, developers, engineers, consultants, contractors and asset managers are making equipment selection decisions today that will influence refrigerant use, emissions and environmental risk profiles for twenty years or more. Refrigeration and air conditioning systems installed in the current decade are likely to remain operational well beyond 2050, leaving a long tail of avoidable emissions. GBCA emphasises that stakeholders require clear and well-considered regulatory signals to avoid future stranded assets and unintended environmental consequences.

Further, buildings are often designed around a particular style of HVAC system. Clear information and policy signals for those responsible for designing and specifying building systems now could avoid the need for significant changes to building services in the future as well as avoiding the risk of stranded assets as HFOs become constrained in supply.

Building owners face long-term risks and liabilities regarding refrigerant emissions. For organisations captured by the Australian Sustainability Reporting Standards, Scope 1 emissions, including those from refrigerants, must be disclosed and the data must be assured. Organisations must also be mindful of emissions related to leakage and during equipment decommissioning; clear documentation of refrigerant recovery and disposal will be required to demonstrate that a refrigerant charge has not been vented to

atmosphere. GBCA notes that greater transparency in the disposal and recovery process will help to strengthen industry confidence. Both long-term emissions liabilities borne by building owners and the full extent of potential environmental and human health impacts lie beyond the liability of chemical manufacturers and importers/suppliers. Consequently, decisions regarding HFO adoption are not short-term choices but long-term commitments with enduring environmental and health implications.

Through Green Star and the Freeze Frame initiative, GBCA has observed growing market demand for lower global harm refrigerant pathways. A stronger IChEMS scheduling outcome would provide an important policy signal. It would encourage investment in truly sustainable alternatives rather than another generation of fluorinated substances with unresolved environmental and health concerns.

GBCA recognises that while increasing the level of regulation will lead to better management of HFCs and drive investment in more sustainable alternatives, this may lead to some additional supply chain challenges. We urge DCCEEW to work with the relevant portfolios to ensure coordinated planning prepares Australia to meet growing demand for alternative refrigerant equipment, and to address potential supply and workplace readiness constraints.

Ongoing improvement for lifecycle refrigerant management is required

In addition to reclassifying HFOs as Schedule 5 chemicals, GBCA supports ongoing improvements to the following critical areas of refrigerant lifecycle management:

- provision of clear and balanced information regarding environmental and health risks;
- awareness-raising of lifecycle impacts among end users and asset owners;
- effective management of risks associated with emissions throughout the refrigerant lifecycle;
- recovery, reclamation at meaningful scale and safe destruction of refrigerants and associated fluorinated chemical wastes at end of life.

Ongoing challenges in these stewardship areas justify a precautionary regulatory approach rather than an assumption that future outcomes will improve without stronger intervention.

The regulatory framework should recognise that industry performance and stewardship outcomes are as important as the intrinsic hazard profile of the chemical itself. Weak stewardship can undermine the intended environmental benefits of even comparatively lower-risk substances.

Nationally consistent controls

Refrigerant supply chains operate nationally, and emissions impacts are not constrained by state boundaries. Given that all HFO refrigerants are imported, either in bulk or incorporated in equipment, there is opportunity for a nationally consistent approach to effective regulation. GBCA believes that strong and consistent Commonwealth-led controls are essential and that responsibility for implementation should not be largely devolved to individual state and territory environmental regulators.

A fragmented approach to scheduling and enforcement risks creating inconsistent requirements, uneven compliance outcomes and regulatory gaps across Australia. Effective refrigerant stewardship requires nationally consistent controls covering importation, sale, use, recovery, reclamation, destruction, record-keeping, reporting and accountability. Leaving substantial discretion to state and territory environmental regulators is likely to hamper effective harm avoidance and undermine the objectives of IChEMS.

GBCA also asserts that the regulations should apply to packaged units containing refrigerants regardless of size – all systems can leak. Currently, HFCs contained in pre-charged imported equipment, such as domestic split systems, are accounted for in the country of manufacture. They are subject to the phase-down under the Montreal Protocol, but not subject to import quotas and the same regulations as other refrigerants in Australia.

Precautionary principle

The National PFAS Management Plan recognises the importance of precaution where there is credible evidence of potential harm, even where scientific understanding continues to evolve. The same principle should guide decision-making regarding HFO refrigerants. Where substantial uncertainty exists regarding long-term environmental fate, degradation products, persistence, human exposure pathways and waste management outcomes, regulatory settings should err on the side of prevention rather than remediation.

There are increasing concerns regarding the environmental and human health impacts associated with HFO refrigerants and their degradation products and the broader fluorochemical supply chain. Of particular concern is the formation of trifluoroacetic acid (TFA) from the atmospheric degradation of some HFO refrigerants and the persistence and mobility of TFA in the environment.[3] These concerns sit within a broader and evolving evidence base regarding persistent fluorinated substances and their potential environmental and human health impacts. [4]

Given these emerging concerns and the potentially irreversible nature of these impacts, regulators should apply the precautionary principle with urgency. Waiting for further environmental testing and scientific certainty increases the risk of long-term harm. Even while the National PFAS Management Plan promotes the elimination of PFAS chemicals, HFO refrigerants are marketed as environment-friendly, a greener solution for cooling due to their lower global warming potential.

Current policy settings should recognise uncertainty as a valid basis for stronger controls where persistent and harmful fluorinated chemicals are involved.

Recommendations

GBCA recommends that:

- HFO refrigerants be assigned a higher schedule under IChEMS (Schedule 5 rather than the proposed Schedule 4) that reflects:
    1. The need for significantly improved stewardship arrangements to adequately prevent emissions of synthetic refrigerants.
    2. The long operational life of refrigeration and air conditioning assets in the built environment.
    3. The need for appropriate industry support for refrigerant recovery, reclamation and destruction.
    4. The need for nationally consistent controls and oversight.
    5. Emerging concerns regarding environmental and human health impacts associated with HFO production, use and degradation products.
    6. The application of the precautionary principle consistent with national chemicals and PFAS management frameworks.
- DCCEEW ensures that stakeholders from the whole supply chain, including building owners and those supplying services for recovery and destruction, are included in targeted consultation before policy decisions regarding the management of HFOs are finalised.

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[3] https://ozone.unep.org/system/files/documents/EEAP%20presentation.pdf

[4] https://www.isprambiente.gov.it/en/news/rac-77-echa-risk-assessment-committee-recommends-classification

- DCCEEW considers working with stakeholders from across the refrigerant supply chain to establish a clear pathway towards the progressive elimination of HFO refrigerants wherever technically and economically feasible in favour of alternatives with low or ultra-low GWP and no PFAS risk.

Conclusion

GBCA considers that the insights gained through Freeze Frame consultation demonstrate that Australia must learn from the policy approach applied to previous generations of synthetic refrigerants. Regulatory frameworks must take account not only of product characteristics but also of demonstrated market behaviour and stewardship outcomes. A stronger scheduling outcome for HFO refrigerants would provide a more appropriate framework for managing risks, promoting accountability across the supply chain and accelerating the transition away from environmentally persistent, fluorinated chemicals.

The experience of the HFC phase-down has shown that reducing the global warming potential of refrigerants alone does not guarantee effective environmental outcomes; appropriate regulatory and policy frameworks to support positive recovery, reclamation and destruction outcomes must remain a central consideration. The same stewardship challenges experienced with HFC refrigerants are likely to persist for HFO refrigerants unless stronger controls and better support are established from the outset.

Given these challenges and the long-lived nature of assets in the built environment; the emerging evidence relating to environmental and health risks associated with HFO production and degradation; and the precautionary principle reflected in Australia's PFAS policy frameworks, GBCA supports the application of a higher IChEMS schedule for HFO refrigerants.

GBCA welcomes further consultation on this matter. To arrange further discussion, for a briefing on our work to date regarding refrigerants, or for additional clarification of the points made above, please do not hesitate to contact Taryn Cornell, Senior Manager Strategy & Development, via email at Taryn.Cornell@gbca.org.au.

Yours sincerely



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