



ICARHMA POLICY STATEMENT

Refrigerants and Responsible Use

Members of the International Council of Air Conditioning, Refrigeration, and Heating Manufacturers' Associations (ICARHMA) are committed to providing conditioned warm and cool air and refrigeration to improve the world's quality of life, health, and productivity. The Council is dedicated to carrying out its business in a sustainable and cost effective way, including minimizing emissions and continuing to contribute to both climate and ozone protection.

The process of choosing refrigerants and of handling them through-out their life cycle are two important aspects of the industry's performance as an environmental steward. ICARHMA members and the industry in general, are engaged in a dedicated effort to identify various types of refrigerants that preserve the environment, and provide refrigerants that can be used in a safe, cost/effective manner in the many applications they are called on to serve. ICARHMA's endorsement of the careful selection of refrigerants most suitable for their intended application, and efforts to prevent emissions of refrigerants into the atmosphere are based on several principles outlined below.

Choosing the Appropriate Refrigerant

When choosing the appropriate refrigerant, it should be evaluated in terms of all the following elements: cost effectiveness in the intended application, energy efficiency, global warming potential, and safety. Therefore, as countries adhere to the Montreal Protocol and the phase-out of all ozone depleting substances (ODS), it is important to consider all criteria when selecting refrigerants for heating, cooling and refrigeration equipment.

ICARHMA Members support the application of all of the following criteria in evaluating the use any refrigerant:

- **Intended Application.** Refrigerants are used in numerous applications, and even though one refrigerant might be the best overall choice for a specific application, it might make a poor choice for another. Refrigerants should be selected on an individual application basis. That selection should never be based on just one factor, e.g. GWP, performance.
- **Performance.** Any evaluation requires considering the performance and energy usage of equipment with potential refrigerants. Having a low GWP refrigerant may not reduce overall greenhouse gas emissions if the equipment using the low GWP refrigerant uses more energy since CO₂ emissions are a by-product of electric power generation.
 - Research is necessary to determine operational efficiency and material compatibility of refrigerants.
- **Safety.** Issues of safety including flammability, toxicity, operating pressures, and corrosiveness must be considered when evaluating refrigerants.
- **Usage Costs To The User and To The Environment**



- Initial and Subsequent Refrigerant Costs. The initial, installation, and maintenance costs of refrigerants should be considered. Successfully replacing high GWP refrigerants on the market may depend on these costs and therefore, its affordability to customers, and its being promoted by contractors and distributors.
- Change-over Cost: Choosing different refrigerants may result in the need to alter existing or add new equipment to effectively allow different refrigerants to perform as intended. These costs need to be identified.
- Environmental Cost: Over the lifetime of a refrigerant using system, refrigerant may be directly emitted during manufacturing, installation, servicing, and disposal at the end of the equipment's useful life. Over the same period, energy is consumed, resulting in CO₂ emissions. To fully understand the total global warming impact, both direct and indirect emission effects have to be considered. Therefore, a standardized Life Cycle Climate Performance (LCCP) calculation or Total Equivalent Warming Impact (TEWI) that would identify all the warming impacts including direct and indirect emissions must be used in any evaluation.

The Responsible Use of Refrigerants

The containment and efficient use of refrigerants is a primary goal of the HVACR industry. ICARHMA members believe that responsible use is based on a number of principles:

- Design, select, install and operate to optimize energy efficiency.
- Contain refrigerants in secure or closed systems and containers minimizing releases into the atmosphere.
- Encourage monitoring after installations to minimize direct refrigerant emissions and maintenance of equipment to maintain energy efficiency.
- Train all personnel in proper refrigerant handling.
- Comply with standards on refrigerant safety, proper installation and maintenance.
- Repair, retrofit, or replace equipment with refrigerant leaks.
- Take appropriate actions at the end of life of equipment to recover, recycle, reclaim or destroy refrigerants.
- Establish safe disposal requirements to ensure removal of refrigerants from equipment that enters the waste stream.
- Promote and encourage improved equipment energy efficiency and reduced refrigerant charge when technically feasible and economically justified.

The Council endorses the [Responsible Use Guide for Minimizing Fluorocarbon Emissions in Manufacturing Facilities](#) – a comprehensive program which includes design optimization, preventive maintenance, training, leak detection and testing, as well as recovery and reclamation – to ensure the direct emissions of refrigerants are minimized.