



Shaping Tomorrow's
Built Environment Today

REFRIGERANTS AND THEIR RESPONSIBLE USE

THE ISSUE

ASHRAE promotes the responsible use of refrigerants during the processes of design, manufacturing, operation and servicing of systems, as well as proper management at the end of equipment life. However, choosing a refrigerant for a given HVAC&R application has become increasingly complex due to their direct and indirect environmental impacts in addition to societal implications they may have based on performance, cost-effectiveness and safety of employees and the public.

Since the implementation of the 1987 Montreal Protocol, and the Kigali Amendment to the Protocol in 2016, transitions to lower global warming potential (GWP) refrigerants are on the rise. This has led to an increase in the development and utilization of flammable refrigerant options that have low-GWP characteristics to meet targets. As a result, safety standards need to be reassessed and updated to reflect the increasing interest in flammable or mildly flammable working fluids.

ASHRAE'S ROLE

With its technical expertise, ASHRAE plays a key role in guiding the choices that must be made for the management of new refrigerants due to the environmental and societal consequences posed by refrigerant management. ASHRAE contributed to the successful effort to phase out ozone depleting refrigerants, and it has a significant role in encouraging the proper and safe use of refrigerants going forward. ASHRAE develops voluntary standards and guidelines governing the application and use of all types of refrigerants. These technical requirements are being adopted into various codes and regulations.

As governments commit to using lower GWP refrigerants, ASHRAE wants to ensure the safe application of these refrigerants, including through the adoption of ASHRAE Standard 15, *Safety Standard for Refrigeration Systems*, and Standard 34, *Designation and Classification of Refrigerants*. Recent updates to these standards were made following a \$5.2 million research program, with financial contributions from DOE (\$3 million), ASHRAE (\$1.2 million) and AHRI (\$1 million), as part of an ongoing global effort to phase out the use of high-GWP refrigerants and identify appropriate climate-friendly alternatives.

ASHRAE'S VIEW

ASHRAE believes the selection of refrigerants and their operating systems should be based on a holistic analysis of multiple criteria. These criteria include energy efficiency and performance attributes, environmental impacts, employee and public safety and economic considerations.

To limit impacts on the environment, emissions of refrigerants should be reduced through research, education, improved design, manufacturing/construction of equipment, field commissioning, maintenance procedures, decommissioning and enforcement of applicable standards and regulations.

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Where possible, refrigerants should be safely recovered for reuse, recycle, reclamation or destruction during service or at the end of the life of the equipment. Refrigerant inventory and management programs should be implemented to closely track refrigerant use.

ASHRAE encourages and supports ongoing efforts to develop new refrigerants and improve the application of existing refrigerants to meet these criteria.

To support responsible design and use of refrigerants, ASHRAE recommends intensifying research efforts conducted by governmental and nongovernmental institutions.