Natural Refrigerants Factsheet

NORTH AMERICAN Sustainable Refrigeration Council

Natural Refrigerants in Supermarkets: The Most Impactful & Cost-Effective Climate Solution

Natural refrigerants, such as carbon dioxide, ammonia, and propane, are the most climate-friendly refrigerant alternative and offer a future-proof solution to high global warming potential Hydrofluorocarbon refrigerants (HFCs) commonly used in supermarkets.

- ☑ **Climate-friendly**
- ☑ **Market-ready technologies**
- ☑ **Future-proof**

HFCs are super-polluting greenhouse gases (GHGs)

Once considered a suitable replacement for ozone-depleting substances (ODS), HFCs are now the world's fastest-growing GHGs and one of the most potent drivers of climate change. Pound for pound, these super-pollutants trap thousands of times more heat in the atmosphere than carbon dioxide. Scientists estimate that HFCs alone could contribute to up to 0.5°C of global warming by the end of the century.

U.S. supermarkets are a leading source of HFC emissions

Supermarket refrigeration is considered one of the most impactful and cost-effective opportunities to reduce HFC emissions. The average supermarket uses thousands of pounds of HFC refrigerant and has a **high leak rate of approximately 25% of the refrigerant charge every year** (about 875 lbs).

Impact of Supermarket Refrigerant Leaks

3,500 lbs.
Refrigerant Charge

Average GWP
Typical Refrigerant

25%
Annual Leak Rate

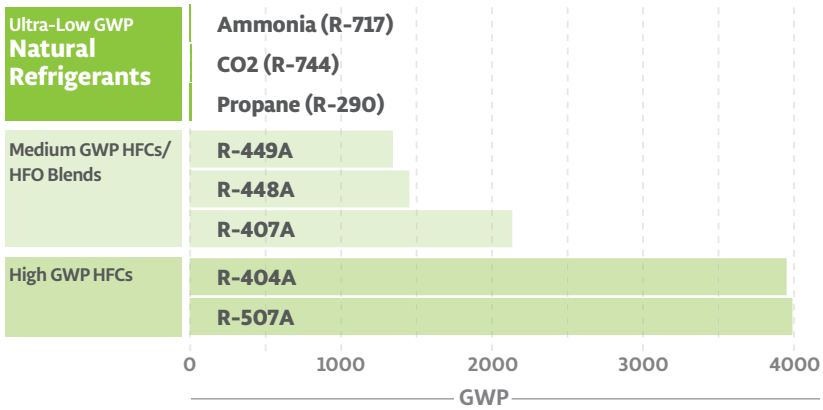
38,000+
U.S. Supermarket Systems

Total Annual Emissions from U.S. Supermarket Refrigerant Leaks

55 Million Metric Tons of CO2
Equivalent Emissions (MTCO2e)

The impact from supermarket refrigeration leaks alone is estimated to be 55 million MTCO2e annually or more than half a billion MTCO2e over 10 years. **That's equivalent to the emissions from burning 608 billion pounds of coal, roughly the annual consumption of 147 coal-fired power plants.**

Classified as Short-Lived Climate Pollutants (SLCPs), HFCs have a disproportionate impact on warming in the near term, making their mitigation significantly more urgent than other GHGs.



U.S. federal and state regulations are phasing-down HFCs

New policies at the state and federal levels are driving a transition away from HFCs. The federal phase-down is expected to impact supermarkets through HFC refrigerant price increases and supply shortages. Learn more about HFC regulations at **nasrc.org/hfc-policy.**

Natural refrigerants are the climate-friendly solution to mitigate supermarket HFC emissions

Natural refrigerants, such as CO2, Ammonia, and Propane, have zero or near-zero global warming potential (GWP) and are considered technically viable, safe, and climate-friendly alternatives to HFCs. Due to their long history of use and negligible environmental impact, natural refrigerants are considered "future-proof" from both a regulatory and environmental standpoint.

AIM Act

Enacted in late 2020, the American Innovation and Manufacturing (AIM) Act directs the EPA to address HFC emissions through three main legislative activities:

1. **Phase down the production and consumption of HFCs by 85% by 2036**
2. **Facilitate the transition to next-generation technologies through sector-based restrictions**
3. **Establish regulatory requirements for the management of refrigerants to maximize reclamation and minimize releases from equipment**

Benefits of Natural Refrigerants

- **Climate-friendly**
- **Zero or near-zero GWP**
- **Regulatory compliance**
- **Future-proof**
- **Accelerate emissions reduction beyond regulations**
- **Market-ready technologies**
- **Potential efficiency gains & cost savings**

Natural refrigerants can accelerate GHG emissions savings

Supermarket refrigeration technologies using natural refrigerants are available in the U.S. market today but currently have extremely low adoption rates. **Currently, less than 2% of U.S. supermarkets use HFC-free natural refrigerant systems.** Though new regulations are driving the transition away from HFCs at the state and federal levels, current U.S. HFC regulations do not require or create the market conditions to stimulate the widescale transition to natural refrigerants. Instead, medium GWP refrigerants with nearly 1,400 GWP are becoming the standard.

Natural refrigerants are critical to delivering accelerated GHG emissions savings above and beyond federal and state regulations.

Because natural refrigerants can't be patented, there is no natural champion to accelerate their adoption. NASRC was founded to pave the way for natural refrigerants in U.S. supermarkets. Visit our website to learn more.

NORTH AMERICAN Sustainable Refrigeration Council

The North American Sustainable Refrigeration Council (NASRC)

The NASRC is a 501(c)(3) environmental nonprofit working to advance climate-friendly natural refrigerants and reduce greenhouse gas emissions caused by traditional hydrofluorocarbon (HFC) refrigerants. We collaborate with stakeholders from across the industry, including over 38,000 food retail locations, to eliminate the barriers to natural refrigerants in supermarkets.