



## **Navigating the Changing Landscape of Refrigerant Regulations**

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# Learning Objectives

By the end of this session, participants will be able to:

- 1. Understand the 2026 refrigerant phase-down** and its impact on sustainability, cold storage systems system and operations.
- 2. Explain the key drivers behind refrigerant changes**, including regulatory phase-outs and sustainability goals.
- 3. Evaluate low-GWP and natural refrigerants** as viable options for next-generation cold storage solutions.
- 4. Assess current refrigeration systems** and consider long-term factors to make informed upgrade or retrofit decisions.



# Who We Are

**Labworks International**, a Hodess company, is a North American leader in precision-controlled environments, providing accurate, energy-efficient, turnkey solutions for temperature- and humidity-sensitive storage for pharmaceutical, life sciences, healthcare, university, research, and technology industries.

**Jose Moreno, B.Eng**  
*Labworks International Sales Engineer*

*Sales Engineer with 20+ years of experience in the refrigeration and commercial HVAC industry.*

*Recognized for contributions to revenue-generating strategies in domestic and international markets, territory expansion, channel sales management, operations management, and new business development.*



# Navigating the Refrigerant Landscape

Refrigerants are critical for cold storage, but the regulatory landscape is changing rapidly. Decisions made today will impact compliance, sustainability, and costs for decades:

## Compliance

- Adhering to new and evolving regulations.

## Sustainability

- Minimizing environmental impact and carbon footprint.

## Cost Efficiency

- Balancing investment with long-term operational savings.



# Why This Matters: Environmental Impact

**Global Warming Potential (GWP):** a measure of how much heat a gas traps in the atmosphere compared to CO<sub>2</sub>.

Refrigerants contribute significantly to greenhouse gas emissions. High-GWP HFCs + HFOs are being phased down under the EPA AIM Act, requiring cold storage operators to adapt for compliance and sustainability.

Low GWP regulations limit GWP below 300 and in some cases under 150.

Refrigeration, Air Conditioning, and Heat Pump Systems			
Subsector	Systems	Global Warming Potential Limit or Prohibited Substances	Installation Compliance Date
Industrial process refrigeration (not using chillers)  &  Cold storage warehouses.	With <b>200 or more lb refrigerant charge</b> excluding high temperature side of cascade system and temperature of the refrigerant entering the evaporator above -30 °C (-22 °F)	<b>150</b>	January 1, 2026
	With <b>less than 200 lb refrigerant charge</b> and temperature of the refrigerant entering the evaporator above -30 °C (-22 °F)	<b>300</b>	January 1, 2026

# Critical Milestone for Cold Storage

Effective January 1, 2026, new cold storage installations will face strict GWP limits, eliminating many high-GWP refrigerants.

**Systems  $\geq 200$  lbs**

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**GWP  $\leq 150$**

**Systems  $< 200$  lbs**

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**GWP  $\leq 300$**

**Result**

New installations with higher-GWP refrigerants will NOT be allowed in 2026.

# The Future is Low GWP Refrigerants

Refrigerants contribute significantly to greenhouse gas emissions. High-GWP HFCs + HFOs are being phased down under the Environmental Protection Agency (EPA) AIM Act, requiring cold storage operators to adapt for compliance and sustainability.

	<b>CFC</b> (1920s - 1996)	<b>HCFC</b> (1960s - 2020)	<b>HFC</b> (1990s - 2020)	<b>HFC/HFO/ BLENDS</b> (2021)	<b>NATURAL AND/ OR FLAMMABLE</b> (2025/2026)												
	  		    	    	      	<b>ODP</b>	0.23 - 0.82	0.055	0	0	0	<b>GWP</b>	4657 - 10910	1810	2100 - 3985	1200 - 2200	0 - 150/300
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Legend	
CFC	Chlorofluorocarbons
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFO	Hydrofluoroolefins
ODP	Ozone Depletion Potential
GWP	Global Warming Potential

Source: Heatcraft

# Implications for Cold Storage

These regulations directly impact facility design and equipment selection, eliminating many legacy refrigerants and restricting options for new builds and sparks consideration when retrofitting systems.

## Facility Design

- New considerations for system layouts.

## Equipment Selection

- Ensuring manufacturers and suppliers are compliant.

## New Builds and Retrofits

- Must meet GWP requirements.



# Refrigerant Options

				
 <b>Global Warming Potential</b>	GWP of 1	GWP of 0	Most satisfy Low GWP (< 300) thresholds	GWP of 3
 <b>Flammability</b>	Not flammable	Not flammable	Low to mildly flammable	Highly flammable
 <b>Toxicity</b>	Low toxicity	High toxicity	Low toxicity	Low toxicity

# Viable/Realistic Refrigerant Options

## R-454C (A2L)

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- **GWP  $\approx$  148** → significant reduction vs. HFCs
- Drop-in or retrofit ready with minimal system changes
- Requires A2L safety design & technician training
- Balanced mix of performance, efficiency, and cost



## R-744 (CO2)

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- **GWP = 1** → near-zero environmental impact
- Non-flammable, non-toxic
- Operates under high pressure; demands specialized equipment and expertise
- Higher initial cost, but excellent long-term sustainability



# Upgrading Refrigeration Systems

Evaluate your current systems and consider long-term factors to make informed upgrade or retrofit decisions.

## Factors Favoring Upgrading

- **Regulations:**  
The EPA's AIM Act is phasing down high-GWP HFCs like R-404A, impacting availability and cost. Federal and state rules may vary.
- **Replacement Refrigerant Costs & Availability:**  
As high-GWP refrigerants decline, prices rise. Lower-GWP alternatives like R-454C and R-744 are becoming more accessible.
- **Efficiency Gains:**  
Modern systems with variable-speed compressors and advanced controls offer better efficiency, lowering costs and environmental impact. ASHRAE sets efficiency standards.
- **Equipment Age:**  
Older systems are prone to leaks and inefficiency. If nearing the end of life, upgrading is a smart investment.

## Factors Against Upgrading

- **Initial Cost:**  
Upgrading requires significant capital for new equipment, installation, and potential infrastructure modifications.
- **Downtime:**  
System upgrades may disrupt operations, leading to lost revenue.
- **Existing Equipment Condition:**  
If the system is well-maintained and relatively new, continuing its use may be more cost-effective.
- **Refrigerant Retrofit:**  
Retrofitting to a lower-GWP refrigerant can be cheaper than replacement but must ensure system efficiency.

# Plan for 2026

Evaluate your facilities' refrigerants now and partner with experts to ensure compliance, improve efficiency, and align with sustainability goals and regulation.

**Have questions or want to learn more?**

Scan the code or come chat with us after the session:



**Thank you for your attention, we'd be happy to answer any questions you have.**

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