Industrial Process Refrigeration and the Phaseout of HCFC-22

What You Need to Know

What Is the HCFC Phaseout?

Under the U.S. Clean Air Act and the *Montreal Protocol on Substances that Deplete the Ozone Layer*, the United States is phasing out the production and import of hydrochlorofluorocarbons (HCFCs) in order to protect the stratospheric ozone layer. By phasing out the production of ozone-depleting substances like HCFCs, we are reducing the risk of skin cancer caused by exposure to UV radiation. In addition, many of these ozone-depleting substances, as well as their substitutes, are greenhouse gases that contribute to climate change.

No Immediate Change Is Required

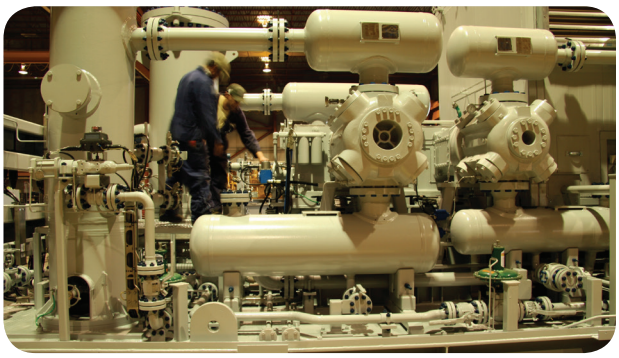
HCFC-22, commonly referred to as R-22, is used as a refrigerant in many applications, including industrial process refrigeration (IPR). Starting on January 1, 2020, U.S. production and import of HCFC-22 will end; however, use of HCFC-22 may continue. HCFC-22 that is recovered and reclaimed, along with HCFC-22 produced prior to 2020, will help meet the needs of owners of existing HCFC-22 systems.

Planning for the Future Is Important

Even though there is no immediate need for change, HCFC-22 supply will decline over the next few years, and prices may rise. By tightening leaks and performing preventive maintenance, you can keep your refrigerant emissions down and reduce the need to purchase additional HCFC-22. When the time does come to replace or retrofit an existing system, there are many non-ozone-depleting alternatives available.

What Alternatives Can Be Used Instead of HCFC-22?

Many non-ozone-depleting alternatives to HCFC-22 are available for use in IPR equipment. See the table on the next page for a list of some acceptable non-ozone-depleting alternatives under EPA's Significant New Alternatives Policy (SNAP) Program. Some of these alternatives are listed for use in both new and retrofitted HCFC-22 systems and others are suitable only for new IPR systems. A full list of acceptable alternatives under SNAP is available at www.epa.gov/ozone/snap/refrigerants/lists/indproc.html.



Acceptable Non-Ozone-Depleting Alternatives to HCFC-22 for IPR				
Chemical	**GWP**	**Ozone Depleting?**	**Retrofit**	**New**
Ammonia Vapor Compression or Absorption	0	No		X
R-744 (Carbon Dioxide, CO_2)	1	No		X
R-450A	601	No	X	X
R-134a	1,430	No	X	X
R-407C	1,770	No	X	X
R-410A	2,090	No		X
R-407A	2,110	No	X	X

GWP = Global Warming Potential. GWP is a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming relative to the same mass of carbon dioxide.

When evaluating an alternative for retrofitting a system, be sure to follow the manufacturer's suggested handling and installation guidelines and to consider possible effects on the system's energy consumption.

Are There Other Refrigerant Regulations Affecting IPR?

The IPR sector is subject to refrigerant management regulations under section 608 of the Clean Air Act. Specifically, leaks must be repaired within 30 days when the equipment leaks at a rate that would release 35% or more of the charge over a year. Additionally, it is illegal to knowingly vent refrigerant—both ozone-depleting refrigerants and the alternatives[1]—during servicing, maintaining or disposing of a refrigeration or air conditioning system.

For Further Information

- Phaseout of Ozone-Depleting Substances: www.epa.gov/ozone/title6/phaseout
- Section 608 of the Clean Air Act: Stationary Refrigeration and Air Conditioning: www.epa.gov/ozone/title6/downloads/Section_608_FactSheet2010.pdf
- Leak Repair Requirements for Systems Containing HCFCs or CFCs: www.epa.gov/ozone/title6/608/leak.html

Other EPA Resources for IPR Managers

- IPR Compliance Guide: www.epa.gov/ozone/title6/608/compguid/compguid.html
- Self-Audit Checklist For IPR Leak Repair Regulations: www.epa.gov/ozone/title6/608/compguid/SelfAuditChecklist.pdf

FOR MORE INFORMATION Visit www.epa.gov/ozone/title6/phaseout/classtwo.html or contact EPA at 1-800-296-1996 or www.epa.gov/ozone/comments.htm.

[1]Several alternatives have been exempted from the venting prohibition. Examples include ammonia in commercial or industrial process refrigeration or in absorption units, and carbon dioxide, nitrogen or water in any application. A complete list is available in section 82.154 of the U.S. Code of Federal Regulations at http://go.usa.gov/kAhQ.

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