Ice Rinks 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 (ODS) 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 is used as a refrigerant in many applications, including ice rinks. Starting on January 1, 2020, U.S. production and import of HCFC-22 will end. This does not mean that use of HCFC-22 must stop at that time. Since a significant inventory of virgin HCFC-22 exists, and recovered and reclaimed material will be available, the U.S. Environmental Protection Agency (EPA) expects use of HCFC-22 to continue well into the future.

Planning for the Future Is Important

Even though there is no immediate need for change, supply of HCFC-22 will decline over the next few years, and prices may rise. For existing HCFC-22 systems, this makes tightening leaks and performing preventive maintenance even more important to keep 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 alternatives available that are safer for the environment. EPA has listed several examples of alternatives in the table on the next page.

What Alternatives Can Be Used Instead of HCFC-22?

Many alternatives that are safer for the environment than HCFC-22 are available for use both in new rinks and in existing systems that require retrofit. 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 retrofitted HCFC-22 systems, and others are only listed for new ice rink refrigeration systems. A full list of acceptable alternatives under SNAP is available at www.epa.gov/ozone/snap/refrigerants/lists/icerinks.html.

Acceptable Non-Ozone-Depleting Alternatives to HCFC-22 Under EPA's SNAP Program				
Chemical	**GWP**	**Ozone Depleting?**	**Retrofit**	**New**
Ammonia	0	No		X
THR-03	918	No		X
R-134a	1,430	No	X	X
RS-24 (2002 formulation)	1,505	No	X	X
R-426A	1,508	No	X	X
R-407C	1,774	No	X	X
R-407F	1,825	No	X	X
R-442A	1,888	No	X	
R-410A	2,088	No		X
R-407A	2,107	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 considering 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 Ice Rinks?

Ice rinks are subject to refrigerant management regulations under section 608 of the Clean Air Act, specifically the requirement to keep leak rates below 15% for comfort cooling appliances and below 35% for refrigeration equipment. In addition, 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
- Leak Repair Requirements for HCFC-22 Systems: www.epa.gov/ozone/title6/608/leak.html
- Leak Prevention and Retrofit Guidelines: www2.epa.gov/greenchill/reports-guidelines-and-tools

Other EPA Resources for Ice Rink Managers

- Indoor Air Quality and Ice Rinks: www.epa.gov/iaq/icearenas.html
- ENERGY STAR for Buildings and Plants: www.energystar.gov/buildings

FOR MORE INFORMATION Visit www.epa.gov/ozone/title6/phaseout/classtwo.html or contact David Donaldson at (202) 343-9086 or donaldson.david@epa.gov.

[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 the U.S. Code of Federal Regulations at http://go.usa.gov/kAhQ.

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