

WHAT TECHNICIANS NEED TO KNOW ABOUT PHASING OUT HCFC REFRIGERANTS

Adapted from information provided by the Environmental Protection Agency (EPA)

LEARN MORE ONLINE

General information: <http://epa.gov/ozone/title6/phaseout/hcfcfaqs.html>

Consumers: <http://epa.gov/ozone/title6/downloads/EPA.homeowners.9-06-06.pdf>

Technicians and contractors: <http://epa.gov/ozone/title6/downloads/TechniciansBrochure12-08-06.pdf>

HYDROCHLOROFLUOROCARBONS

Hydrochlorofluorocarbons (HCFCs) are chemicals that are mainly used as refrigerants in the air conditioning and refrigeration industries. Unfortunately, releases of HCFCs damage the ozone layer, which shields the earth from harmful ultraviolet radiation. The U.S. is one of more than 190 countries that have agreed to phase out the manufacture of these ozone-depleting substances and find alternatives.

Phaseout of HCFC-22 and HCFC-142b

HCFC-22 (also referred to as R-22 or by one of its trade names, Freon[®] 22) is a popular refrigerant that is commonly used in a variety of refrigeration and air conditioning equipment, including:

Residential uses

- ▶ Window air conditioning units
- ▶ Dehumidifiers
- ▶ Central air conditioners
- ▶ Air-to-air heat pumps
- ▶ Ground-source heat pumps
- ▶ Ductless air conditioners
- ▶ Chest or upright freezers

Commercial and industrial uses

- ▶ Packaged air conditioners and heat pumps
- ▶ Chillers
- ▶ Retail food refrigeration
- ▶ Cold storage warehouses
- ▶ Industrial process refrigeration
- ▶ Transport refrigeration

HCFC-22 is often used as a component in refrigerant blends that contain several compounds. Some common end uses for refrigerant blends that contain HCFC-22 are shown in Table 1 at the top of the next page.

HCFC-142b, or R-142b, is also used as a refrigerant. HCFC-142b is rarely used by itself—it is generally a component of some other refrigerant blend. For example, it is part of a blend known as R-409A, which also includes HCFC-22 (see Table 1). HCFC-142b is also used for foam blowing and as a propellant in aerosol cans.

HCFC-22 and HCFC-142b are being phased out according to the following schedule:

- ▶ *January 1, 2010*
Ban on production and import of HCFC-22 and HCFC-142b except for on-going servicing needs of existing equipment.
- ▶ *January 1, 2015*
Ban on sale and use of HCFC-22 and HCFC-142b except for certain uses, including on-going servicing needs of existing refrigeration and air conditioning equipment.
- ▶ *January 1, 2020*
Ban on remaining production and import of HCFC-22 and HCFC-142b.

After 2020, the servicing of systems that use R-22 or R-142b will rely on recovered or stockpiled quantities. It is difficult to predict when these

End use	R-401A	R-402A	R-409A	R-502
Retail food refrigeration	X	X	X	X
Cold storage warehouses	X	X		X
Industrial process refrigeration	X			
Transport refrigeration	X	X		X

Table 1. Refrigerant blends that contain R-22 and their uses

supplies will run out. Supplies may be available until almost all equipment containing R-22 or R-142b is retired. However, in the future, supplies will be more limited and costs of HCFCs will likely rise.

YOUR ROLE AS AN HVACR TECHNICIAN

As a service technician with the responsibility to install, service, and repair equipment that may contain HCFCs or other refrigerants, you play an important role in implementing the phaseout of HCFCs. The information contained in this document will help you better adapt to changing industry practices and provide consumers with appropriate service and information. First, you must understand your responsibilities under the regulations:

- ▶ You must have EPA Section 608 certification to service refrigeration and air conditioning equipment containing HCFCs.
- ▶ As a best practice, locate and repair leaks instead of “topping off” leaking systems.
- ▶ It is illegal to intentionally release any refrigerant when servicing, repairing, or maintaining equipment. In most cases, you must use refrigerant recovery equipment during service, maintenance, or repair.
- ▶ In some cases, you may recharge equipment with recovered HCFC refrigerants. If the refrigerant is being charged back into the same appliance or to another appliance owned by the same person, the used refrigerant does not need to be recycled or reclaimed.
- ▶ Technicians should properly recover and recycle R-22 from existing refrigeration and air

conditioning equipment to help ensure the availability of future supplies. Recovered refrigerant cannot be sold to a new owner—instead, it must be sent to an EPA-certified reclaimer prior to sale.

A *recovered* refrigerant is one that was removed from refrigeration or air conditioning equipment and stored in an external container without necessarily being tested or processed in any way.

A *recycled* refrigerant has been extracted and cleaned for reuse without meeting the stringent requirements for reclamation.

A *reclaimed* refrigerant has been reprocessed using specialized machinery and tested to meet industry purity standards.

TECHNICIANS’ FAQ (FREQUENTLY ASKED QUESTIONS)

What alternatives to R-22 are acceptable and available?

The EPA maintains a list of acceptable and unacceptable alternatives to R-22 according to end use, including specific refrigeration and air conditioning applications. There are several acceptable alternatives to R-22 that do not deplete the ozone layer. These include R-134a, R-404A, R-407C, and R-410A. In the U.S., R-410A has become the most popular choice for home air conditioners. R-410A is marketed under several trade names, including Genetron AZ-20®, SUVA 410A®, and Puron®. Note that R-410A can be used

only in new (not retrofitted) residential air conditioners.

An alternative refrigerant generally cannot be used as a “drop-in” replacement in an existing system without modifying the system components. If substitutes are used in converted (retrofitted) equipment that was originally manufactured for use with CFCs, you should be trained on proper retrofit installation and servicing techniques.

Is EPA technician certification required to purchase R-410A or to service R-410A systems?

No. At present, the purchase of HFC refrigerants is not restricted—that is, there is no technician certification required for the purchase of HFC refrigerants, such as R-410A or R-134a. Nor is EPA Section 608 certification required at this time in order to service R-410A systems or other systems containing HFCs.

Are there any limitations on the use of HFC refrigerants?

Yes, a specific HFC refrigerant must be found acceptable as a substitute for a specific end use by the EPA’s Significant New Alternatives Policy (SNAP) program. A list of acceptable refrigerant substitutes is available from the EPA Web site.

In addition, as stated previously, it is illegal to knowingly release *any* refrigerants. The venting prohibition applies to R-134a, R-410A, and all other HFC refrigerants.

May I use recovered HCFC refrigerants? Are there any special requirements?

Yes, under special circumstances EPA regulations allow equipment to be recharged with recovered (rather than reclaimed) HCFC refrigerants. If the used refrigerant is being charged back into the same appliance or to another appliance owned by the same person, the used refrigerant does not need to be recycled or reclaimed. If the refrigerant will be used in equipment with different ownership, recovered refrigerants must be reclaimed.

How should HCFC refrigerants be disposed of?

Recovered HCFC refrigerants should be sent to an EPA-certified refrigerant reclaimer. Only EPA-certified reclaimers may reclaim and sell used refrigerants to a new owner. Technicians and contractors may also send HCFC refrigerants to be destroyed.

How should equipment containing HCFC refrigerants be disposed of?

Under Section 608 regulations, the refrigerant contained in the equipment must be disposed of safely. Equipment that is typically disassembled on-site before disposal must have the refrigerant recovered in accordance with the EPA’s requirements for servicing. For equipment that typically enters the waste stream with the charge intact (e.g., household refrigerators and freezers, room air conditioners), the final person in the disposal chain (a scrap metal recycler or landfill owner, for example) must make sure that the refrigerant is recovered from the equipment before its final disposal. However, persons earlier in the chain can remove the refrigerant and provide documentation of its removal to the final person.

How will the revised energy efficiency standards for air conditioners affect the phaseout of HCFCs?

The U.S. Department of Energy (DOE) specifies the minimum efficiency of air conditioners sold in the U.S. For central air conditioners and air-to-air heat pumps, efficiency is measured by the *seasonal energy efficiency ratio* (SEER). In January 2006, the minimum efficiency ratio for most types of new equipment increased from 10 to 13, which means that new units must be 30% more efficient.

Air conditioners that use R-22 or its alternatives and that meet the new energy efficiency requirements are available for purchase. Some other air conditioners, however, will require a larger charge size (i.e., more refrigerant) to meet the higher efficiency standard, which will increase the demand for R-22 at the same time that production will decrease.

What should I tell my customers about the phaseout?

Technicians are an important source of information for consumers. You should tell your customers that HCFCs are being phased out worldwide, and explain that this phaseout will help repair the ozone layer and reduce incidences of skin cancer. Make sure that your customers are aware of the following facts:

- ▶ They are not required to stop using HCFC refrigerants at the present time, nor do they have to replace existing equipment. However, the

future availability of R-22 will be limited to servicing existing equipment, which means that the supply of R-22 likely will decrease in the future.

- ▶ The phaseout period provides time for them to switch to ozone-friendly refrigerants when they normally would replace their air conditioning equipment.
- ▶ Recommend to your customers that they visit the EPA Web site at www.epa.gov/ozone/ for more information.

