

Management of HCFC-123 through the Phaseout and Beyond



What is the HCFC Phaseout?

Under the *Montreal Protocol on Substances that Deplete the Ozone Layer*, all countries are phasing out ozone-depleting hydrochlorofluorocarbons (HCFCs). HCFCs have been used in a wide variety of applications, including refrigeration, air conditioning (AC), foam blowing, solvents, aerosols, and fire suppression. The EPA regulates the production and import of HCFCs under Title VI of the Clean Air Act (CAA). Production and consumption of all HCFCs in the United States is currently less than 0.5 percent of the historic U.S. baseline. Newly produced (also known as virgin) or imported HCFCs may only be used to service AC, refrigeration, and fire suppression equipment that was manufactured before January 1, 2020. All U.S. production and import of virgin HCFCs will be phased out by 2030, with limited exceptions.

Will HCFC-123 be available for servicing my existing equipment?

In 2020-2022, up to 650 MT of HCFC-123 may be imported into the U.S. each year for use in old equipment. The allowed amount will decrease every subsequent year until the phaseout of HCFCs for servicing refrigeration and fire suppression equipment is complete in 2030. HCFC-123 that is recovered and reclaimed, along with virgin HCFC-123 produced prior to 2020, can also be used to service HCFC-123 systems. As we near 2030, when import of virgin HCFC-123 will be phased out, reclaimed HCFC-123 will be important to ensure there is sufficient supply.

How should refrigerant be managed when an appliance is retired or replaced?

HCFC-123 systems have long lifetimes, and many could be used for many more years. An estimated 40 percent of HCFC-123 chillers and IPR systems are expected to be retired between 2020 and 2030. As these appliances are retired, more HCFC-123 will likely be available for recovery and reclamation given the low leak rates and large charge sizes of the appliances. It is important to recover refrigerant from these systems so it can be reclaimed for future use. This reclaimed HCFC-123 will be an important supply for use in fire suppression and refrigeration and AC equipment that was manufactured before January 1, 2020. If you are retiring or replacing an HCFC-123 system, work with your contractor to ensure the refrigerant is either sent to a reclaimer for sale, will be used by another system onsite, or will stay within the company.

What is HCFC-123?

HCFC-123 is currently imported or reclaimed for use as a refrigerant and for the manufacture of a fire suppression agent used in handheld extinguishers, wheeled extinguishers, and aircraft rescue and firefighting (ARFF) vehicles in commercial, industrial, transportation, and military applications in the United States. HCFC-123 refrigerant is used in chillers and industrial process refrigeration (IPR). Chillers regulate the temperature and humidity in offices, hotels, shopping centers, and other buildings, and IPR are complex, customized systems used to cool process streams in industrial applications in the chemical, food processing, pharmaceutical, petrochemical, and manufacturing industries.

What are the Section 608 regulations and how do they pertain to reclamation of HCFC-123?

Section 608 of the CAA prohibits the knowing release of refrigerant during the maintenance, service, repair, or disposal of AC and refrigeration equipment. For all refrigerants that contain ozone-depleting substances, e.g., HCFCs, and all non-exempt substitute refrigerants, e.g., hydrofluorocarbons (HFCs), hydrofluoroolefins (HFOs), and blends thereof, the EPA requires proper refrigerant management practices by reclaimers, those who buy or sell refrigerant, owners and operators of refrigeration and AC systems, technicians, and others.

Under the Section 608 regulations, contractors and technicians must recover refrigerant when retiring an appliance and keep records documenting refrigerant recovery and where those refrigerants are sent for reclamation or disposal. They can return recovered refrigerant to a consolidator (such as a refrigerant manufacturer, supplier, wholesale distributor, or refrigerant recovery company), or in some cases directly to an EPA-certified reclaimer, for packaging and preparation prior to reclamation. More information on the Section 608 requirements, including a full list of EPA-certified reclaimers, is available at www.epa.gov/section608/.



HCFC-123 centrifugal chiller.

Planning for the Future Is Important

The supply of virgin HCFC-123 will decline as we near the phaseout of HCFCs in 2030. By repairing leaks and performing preventive maintenance, you can keep your refrigerant emissions down and reduce the need to purchase additional HCFC-123 for servicing.

When the time does come to replace or retrofit a system, there are many non-ozone-depleting alternatives to HCFC-123 available for use in chillers and IPR systems. Some alternatives are suitable for use in both new and retrofitted systems, and others are suitable only for new systems. For instance, HCFC-123 chillers that are still in use may be retrofitted to use HFC-245fa and certain HFOs. Newer alternatives, such as HFO-1234ze(E), HFO-1336mzz(Z), HCFO-1233zd(E), R-450A, R-513A, and R-514A have been evaluated and listed as acceptable by the EPA's Significant New Alternatives Policy (SNAP) program for new chillers. IPR systems historically used CFC-11 and CFC-12. IPR systems with HCFC-22, HCFC-123, and R-410A (a component of which is HCFC-124) are still in use, though this market may be transitioning to R-717 (ammonia), R-744 (carbon dioxide), R-448A, R-449A, R-450A, R-513A, R-514A, and HCFO-1233zd(E). A full list of alternatives for these appliances under the SNAP program is available at <https://www.epa.gov/snap/substitutes-refrigeration-and-air-conditioning>.

Additional Resources

Section 608 Program: www.epa.gov/section608

HCFC Phaseout Program: www.epa.gov/ods-phaseout/phaseout-class-ii-ozone-depleting-substances

SNAP Program: www.epa.gov/snap/substitutes-refrigeration-and-air-conditioning

Contact EPA: www.epa.gov/ods-phaseout/forms/contact-us-about-phaseout-ozone-depleting-substances