



FACT SHEET: SUMMARY OF PROPOSED REGULATIONS FOR RECYCLING OF SUBSTITUTE REFRIGERANTS UNDER SECTION 608

Introduction

Under section 608 of the Clean Air Act, it has been illegal since November 15, 1995, to knowingly vent substitutes for CFC and HCFC refrigerants during the maintenance, service, repair and disposal of air-conditioning and refrigeration equipment. On June 11, 1998, EPA proposed a regulation to fully implement this statutory venting prohibition.

This fact sheet summarizes the proposed rule and explains how EPA is currently applying the venting prohibition to the different substitute refrigerants and to the various types of air-conditioning and refrigeration equipment. The full text of the proposed rule, including the rationale for the various provisions, was published in the Federal Register on June 11, 1998, at 63 FR 32044. This text may also be found at EPA's web site at <http://www.epa.gov/ozone/title6/608/>. EPA invites the public to comment on the proposed rule. The Agency will then address comments and issue the final rule.

Overview of Proposed Rule

In brief, the proposed regulations would:

- Exempt certain substitute refrigerants from the venting prohibition;
- Extend to HFC and PFC refrigerants the requirements currently in place for CFC and HCFC refrigerants, including required practices, certification programs for recovery/recycling equipment, reclaimers, and technicians, a prohibition on the sale of

refrigerant to anyone but certified technicians, leak repair requirements, and safe disposal requirements;

- Make minor changes to the required practices, recovery equipment standards, and refrigerant purity standards for CFCs and HCFCs to accommodate the addition of the HFC and PFC refrigerants; and
- Lower the maximum allowable leak rates for comfort cooling chillers, commercial refrigeration, and industrial process refrigeration. The new maximum allowable leak rates would apply to equipment containing CFCs, HCFCs, HFCs, and PFCs.

Covered Substitutes

Section 608 directly prohibits the venting of substitute refrigerants during the maintenance, service, repair, and disposal of air-conditioning and refrigeration equipment unless EPA determines that the release of the substitute does not pose a threat to the environment. EPA is considering a number of factors in making this determination, including the substitute's toxicity, flammability, long-term environmental impact (such as global warming potential), and regulation under other authorities (such as OSHA or other EPA requirements). Based on these considerations, the following refrigerants are subject to the venting prohibition, and EPA is proposing to **cover** them under the regulations:

- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)

EPA is proposing to **exempt** the following

refrigerants from the venting prohibition:

- ammonia that is used in absorption systems or in commercial or industrial process refrigeration systems
- hydrocarbons that are used in industrial process refrigeration systems for processing hydrocarbons
- chlorine that is used in industrial process refrigeration systems for processing chlorine or chlorine compounds
- CO₂, nitrogen, and water

This proposed exemption applies only to applications of these refrigerants that have been approved under EPA's Significant New Alternatives Policy (SNAP) Program. The applicability of recycling requirements to these substitutes in other applications (e.g., hydrocarbons in household refrigerators) will be considered when the substitutes in those applications are submitted for SNAP review.

Note that it may be dangerous to use CFC and HCFC recovery equipment to recover ammonia, hydrocarbons, or chlorine. However, users of hydrocarbon, ammonia, and pure chlorine refrigerants must continue to comply with all other applicable federal, state, and local restrictions on emissions of these substances.

Permitted Releases

As is the case for CFC and HCFC refrigerants, only four types of releases of HFCs and PFCs are permitted under the prohibition:

1. "De minimis" quantities of refrigerant released in the course of making good faith attempts to recapture and recycle or safely dispose of refrigerant.
2. Refrigerants emitted in the course of normal operation of air-conditioning and

refrigeration equipment such as from mechanical purging and leaks.

3. Releases of HFCs and PFCs that are not used as refrigerants (note that heat transfer fluids are considered refrigerants).
4. Small releases of refrigerant that result from purging hoses or from connecting or disconnecting hoses to charge or service appliances.

More information on permitted releases may be found in the "Final Rule Summary: Complying with the Section 608 Refrigerant Recycling Rule," which can be found at EPA's web site or obtained from the Hotline at 1-800-296-1996.

Proposed Requirements

Service Practice Requirements

Under the proposed regulation, technicians would be required to evacuate air-conditioning and refrigeration equipment containing HFCs or PFCs to certain vacuum levels when opening the equipment for service or disposal. These vacuum levels are shown in Table 1 and would depend upon the saturation pressure of the refrigerant, the size of appliance in which it is used, and the date of manufacture of the recovery equipment. The vacuum levels would apply to CFCs and HCFCs as well as to HFCs and PFCs.

These evacuation requirements are very similar to those currently in place for CFCs and HCFCs, except EPA is proposing two changes to the current system for classifying appliances and refrigerants. First, EPA is proposing to classify refrigerants according to their saturation pressures at 104 degrees F rather than their boiling points. Second, EPA is proposing to eliminate the special category for R22 and replace it with a new saturation pressure category that includes the "high-pressure" refrigerants with the highest saturation pressures. Both of these changes are

being proposed in order to implement recovery requirements that are based solely on the saturation pressure of the refrigerant. Details on these proposed changes can be found under the definitions of “low-pressure,” “high-pressure,” “higher pressure,” and “very high pressure” on page 7 of this fact sheet and in the proposed rule.

Recycling and Recovery Equipment

EPA has proposed standards for HFC and PFC recovery equipment that are very similar to the standards for CFC and HCFC equipment. The standards would depend upon the saturation pressure of the refrigerant, the size of appliance in which it is used, and the date of manufacture of the recovery equipment. (Note that EPA is proposing to retain November 15, 1993 as the date of manufacture that would separate

the stricter from the more lenient standards.) These standards are described in Table 1 and Table 2. (Standards for equipment used to recover refrigerant from disposed motor-vehicle air conditioners [MVACs], MVAC-like appliances [such as air conditioners used in construction and farm vehicles], and small appliances are discussed below in the Safe Disposal section.) As noted above, EPA is also proposing to establish a new saturation pressure category between the high- and very-high pressure categories; appliances in this category would be subject to the same evacuation requirements as HCFC-22

**TABLE 1
PROPOSED LEVELS OF EVACUATION FOR APPLIANCES
EXCEPT FOR SMALL APPLIANCES, MVACS, AND MVAC-LIKE APPLIANCES**

Type of Appliance	Inches of Mercury Vacuum [*] Using Equipment Manufactured:	
	Before Nov. 15, 1993	On or after Nov. 15, 1993
Very High Pressure Appliance ^{**} (R410A/B, R13, R23, R503)	0	0
Higher-pressure appliance ^{**} normally containing less than 200 pounds of refrigerant (R22, R502, R402A/B, R407A/B/C)	0	0
Higher-pressure appliance ^{**} normally containing 200 pounds or more of refrigerant (R22, R502, R402A/B, R407A/B/C)	4	10
High-pressure appliance ^{**} normally containing less than 200 pounds of refrigerant (R12, R114, R134a, R401A/B/C, R500)	4	10
High-pressure appliance ^{**} normally containing 200 pounds or more of refrigerant (R12, R114, R134a, R401A/B/C, R500)	4	15
Low-pressure appliance ^{**} (R11, R123, R113)	25	25 mm Hg absolute

^{*}Relative to standard atmospheric pressure of 29.9" Hg.

^{**}Or isolated component of such an appliance

**TABLE 2
PROPOSED LEVELS OF EVACUATION FOR SMALL APPLIANCES**

Status of Compressor	Percentage Refrigerant Recovered* Using Equipment Manufactured:	
	Before Nov. 15, 1993	On or after Nov. 15, 1993
Operational	80	90
Non-operational	80	80

*Technicians may also satisfy recovery requirements by evacuating the small appliance to four inches of mercury vacuum.

appliances currently are.

Use of CFC and HCFC recovery equipment.

Manufacturers of recycling and recovery equipment have stated that most recovery and recycling equipment designed for use with **multiple** CFC or HCFC refrigerants (e.g., 12, 22, 500, and 502) can be adapted for use with HFC and PFC refrigerants with similar saturation pressures. Thus, EPA is proposing to allow technicians to recover HFCs and PFCs using recovery or recycling equipment designed for use with at least two CFC or HCFC refrigerants of similar saturation pressure. This equipment would have to meet the standards discussed in the preceding paragraph, and if it was manufactured on or after November 15, 1993, it would have to have been certified by an EPA-approved third-party certification program (ARI or UL) for at least two refrigerants with saturation pressures similar to the saturation pressure of the refrigerant(s) with which the equipment is to be used.

In some cases, manufacturers recommend changing the lubricant in the recycling or recovery equipment from mineral oil to polyol ester lubricant (POE). In other cases, no lubricant change is necessary. Individuals who intend to use their existing CFC or HCFC recovery equipment with HFCs should **contact the manufacturer** to ascertain what changes, if any, need to be made to the equipment.

Technician Certification

EPA is proposing to extend the certification requirements for technicians who work with CFC and HCFC refrigerants to technicians who work with HFCs and PFCs. Technicians who have been certified to work with CFCs and HCFCs would not have to be retested to work with HFCs or PFCs, but new technicians entering the field would have to pass a test to work with CFCs, HCFCs, HFCs, and/or PFCs.

Sales Restriction

EPA is proposing to extend the sales restriction on CFC and HCFC refrigerants to HFC and PFC refrigerants. This means that persons purchasing CFC, HCFC, HFC or PFC refrigerants would either have to be certified technicians themselves or would have to employ someone who was a certified technician. The sales restriction would apply to these refrigerants in all sizes of containers for use in all types of appliances, including motor vehicle air conditioners.

Leak Repair Requirements

Currently, owners of equipment containing more than 50 pounds of CFC or HCFC refrigerant are required to repair leaks when those leaks together would result in the loss of more than a certain percentage of the equipment's charge over a year. EPA is proposing several changes to the current leak repair requirements. First, EPA is proposing to lower the current maximum allowable leak rates for most types of air-conditioning and refrigeration equipment. Second, EPA is proposing to extend the leak repair requirements to air-conditioning and refrigeration equipment containing more than 50 pounds of HFC or PFC refrigerant. Third, EPA is proposing a number of changes to clarify the leak repair requirements, including adding a definition of "leak rate" to the regulations.

The proposed allowable leak rates for the various types of appliances are shown in

Table 3 below. These leak rates would apply to appliances containing more than 50 pounds of CFC, HCFC, HFC, or PFC refrigerants, and would become effective 30 days after publication of the final rule, except for the provisions affecting industrial process refrigeration, which would become effective three years after publication of the final rule.

Safe Disposal Requirements

EPA is proposing to adopt the same approach to the disposal of small appliances, MVACs, and MVAC-like appliances charged with HFCs and PFCs that it has adopted for these types of equipment charged with CFCs and HCFCs. In brief, persons who took the final step in the disposal process of small appliances, MVACs, and MVAC-like appliances would have to either recover any remaining refrigerant in the appliance or verify that the refrigerant had been recovered previously. If they verified that the refrigerant had been recovered previously, they would have to retain a signed

**TABLE 3
PROPOSED MAXIMUM PERMISSIBLE LEAK RATES**

Type of Appliance	Current Allowable Leak Rate (percent of charge/year)	Proposed Allowable Leak Rate (percent of charge/year)
Commercial refrigeration equipment built before or during 1992	35	15
Commercial refrigeration equipment built after 1992	35	10
Industrial process refrigeration equipment - built before or during 1992, - custom-built, - possessing an open-drive compressor, and - containing a single, primary refrigerant loop (direct expansion)	35	35
All other industrial process refrigeration equipment	35	20
All other appliances containing more than 50 pounds of refrigerant (e.g., comfort-cooling chillers) and built before or during 1992	15	10
All other appliances containing more than 50 pounds of refrigerant (e.g., comfort-cooling chillers) and built after 1992	15	5

statement attesting to this.

Recovery Requirements for Disposal of Small Appliances

Under the proposed rule, recovery equipment used to recover HFC refrigerant from small appliances prior to their final disposal would have to meet the same performance standards as recovery equipment used prior to servicing (see Table 2), but it would not have to be tested and certified by a laboratory.

Recovery Requirements for Disposal of MVACs and MVAC-like Appliances

Under the proposed rule, recovery equipment used to recover HFC refrigerant from MVACs and MVAC-like appliances prior to their final disposal would have to be able to draw 102 mm (four inches) of vacuum. (This is the same as the standard for CFC equipment.) If the refrigerant were sent to a reclaimer, no further equipment requirements (such as certification by a laboratory) would apply. However, under an amendment to the Subpart B (section 609) regulations that became effective on January 29, 1998, refrigerant that is recovered from and then reused in MVACs without first undergoing reclamation must be recovered using recovery or recycling equipment that is certified under Subpart B and that is dedicated for use with MVACs. In addition, the equipment must either be designed to handle multiple refrigerants or be dedicated to recovery of a single refrigerant. For more information on the purity requirements for refrigerant removed from and reused in MVACs, see "Recovering Refrigerant at Salvage Yards and Other Motor Vehicle Disposal Facilities." This document is available from the hotline or on the web at <http://www.epa.gov/ozone/title6/609/salvage.html>. **The requirements for equipment used to recover refrigerants (including substitutes) reused in MVACs are in effect now.**

Refrigerant Purity Requirements

EPA is proposing that used HFC refrigerants that are sold to a new owner would have to be reclaimed by a certified reclaimer to the ARI 700-1995 standard. The Agency is also proposing to adopt this standard (in place of ARI 700-1993) for used CFCs and HCFCs. (EPA is considering a comprehensive revision to its refrigerant purity requirements under a separate rulemaking [61 FR 7858]. In the proposed substitutes recycling rule, EPA is not soliciting comment on which refrigerant purity regime is preferable for all refrigerants, but is only soliciting comment on whether the purity of HFCs and PFCs should be maintained through a different regulatory approach than the purity of CFCs and HCFCs.)

As is the case for CFC and HCFC refrigerants, HFC refrigerants recovered from and reused in MVACs are subject to the purity requirements of the MVAC regulations published at subpart B. Under these regulations, which became effective on January 29, 1998, HFC refrigerants that are removed from one MVAC and placed into another must be either (1) reclaimed by a certified reclaimer, or (2) recycled by a 609-certified technician through 609-certified equipment. These requirements apply in addition to the equipment requirements above and are in effect now.

For Further Information

For further information concerning regulations related to stratospheric ozone protection, please visit EPA's web site at <http://www.epa.gov/ozone/title6/608/>, or call the Stratospheric Ozone Information Hotline: 800-296-1996. The Hotline is open between 10AM and 4PM Eastern Time.

PROPOSED DEFINITIONS

<i>appliance</i>	any device which contains and uses a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer.
<i>high-pressure appliance</i>	an appliance that uses a refrigerant with a liquid phase saturation pressure between 45 psia and 220 psia at 104 degrees F. This definition includes but is not limited to appliances using R12, R114, R134a, R401A and B, and R500.
<i>higher-pressure appliance</i>	an appliance that uses a refrigerant with a liquid phase saturation pressure between 220 psia and 305 psia at 104 degrees F. This definition includes but is not limited to appliances using R22, R502, R402A and B, and R407A, B, and C.
<i>leak rate</i>	<p>the rate at which an appliance is losing refrigerant, measured between refrigerant charges or over 12 months, whichever is shorter. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate is calculated using the following formula:</p> $\frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365 \text{ days/year}}{\text{shorter of: \# days since refrigerant last added and 365 days}} \times 100\%$
<i>low-pressure appliance</i>	an appliance that uses a refrigerant with a liquid phase saturation pressure below 45 psia at 104 degrees Fahrenheit. This definition includes but is not limited to appliances using R11, R123, and R113.
<i>refrigerant</i>	<p>any class I or class II substance used for heat transfer purposes, or any substance used as a substitute for such a class I or class II substance by any user in a given end-use, except for the following substitutes in the following end-uses:</p> <ul style="list-style-type: none">• ammonia in commercial or industrial process refrigeration or in absorption units• hydrocarbons in industrial process refrigeration (processing of hydrocarbons)• chlorine in industrial process refrigeration (processing of chlorine and chlorine compounds)• carbon dioxide in any application• nitrogen in any application• water in any application
<i>substitute</i>	any chemical or product substitute, whether existing or new, that is used by any person as a replacement for a class I or II compound in a given end-use.
<i>very-high-pressure appliance</i>	an appliance that uses a refrigerant with a critical temperature below 104 degrees Fahrenheit or with a liquid phase saturation pressure above 305 psia at 104 degrees Fahrenheit. This definition includes but is not limited to appliances using R410A and B, R13, R23, and R503.