

SOLVENT CLEANING SECTOR—PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS  
SUBSTITUTES—Continued

Application	Substitute	Decision	Conditions	Comments
Precision Cleaning w/ CFC-113, MCF and HCFC-141b.	Monochlorotoluenes and benzotrifluorides.	Acceptable .....	Subject to a 50 ppm workplace standard for monochlorotoluenes and a 25 ppm standard for benzotrifluorides.	The workplace standard for monochlorotoluenes is based on an OSHA PEL of 50 ppm for orthochlorotoluene. The workplace standard for benzotrifluorides is based on a recent toxicology study.

ACCEPTABLE SUBJECT TO NARROWED USE LIMITS: STREAMING AGENTS

Application	Substitute	Decision	Comments
Halon 1211 ..... Streaming Agents	CF <sub>3</sub> I .....	Acceptable in non-residential uses only.	

AEROSOLS—PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS SUBSTITUTES

Application	Substitute	Decision	Conditions	Comments
CFC-113, MCF and HCFC-141b as solvent.	Monochlorotoluenes and benzotrifluorides.	Acceptable .....	Subject to a 50 ppm workplace standard for monochlorotoluenes and a 25 ppm standard for benzotrifluorides.	The workplace standard for monochlorotoluenes is based on an OSHA PEL of 50 ppm for orthochlorotoluene. The workplace standard for benzotrifluorides is based on a recent toxicology study.

ADHESIVES, COATINGS AND INKS—PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS  
SUBSTITUTES

Application	Substitute	Decision	Conditions	Comments
CFC-113, MCF and HCFC-141b.	Monochlorotoluenes and benzotrifluorides.	Acceptable .....	Subject to a 50 ppm workplace standard for monochlorotoluenes and a 25 ppm standard for benzotrifluorides.	The workplace standard for monochlorotoluenes is based on an OSHA PEL of 50 ppm for orthochlorotoluene. The workplace standard for benzotrifluorides is based on a recent toxicology study.

[61 FR 25592, May 22, 1996, as amended at 67 FR 4201, Jan. 29, 2002]

EFFECTIVE DATE NOTE: At 61 FR 25592, May 22, 1996, Appendix C to Part 82 Subpart G was added. This appendix contains information collection and recordkeeping requirements which will not become effective until approval has been given by the Office of Management and Budget.

APPENDIX D TO SUBPART G OF PART 82—  
SUBSTITUTES SUBJECT TO USE RE-  
STRICTIONS AND UNACCEPTABLE SUB-  
STITUTES

*Summary of Decisions*

Refrigeration and Air Conditioning Sector  
Acceptable Subject to Use Conditions

R-406A/"GHG"/"McCool", "GHG-HP", "GHG-X4"/"Autofrost"/"Chill-It", and "Hot Shot"/"Kar Kool" are acceptable substitutes for CFC-12 in retrofitted motor vehicle air conditioning systems (MVACs) subject to the use condition that a retrofit to these refrigerants must include replacing non-barrier hoses with barrier hoses.

erants must include replacing non-barrier hoses with barrier hoses.

For all refrigerants submitted for use in motor vehicle air conditioning systems, subsequent to the effective date of this FRM, in addition to the information previously required in the March 18, 1994 final SNAP rule (58 FR 13044), SNAP submissions must include specifications for the fittings similar to those found in SAE J639, samples of all fittings, and the detailed label described below at the same time as the initial SNAP submission, or the submission will be considered incomplete. Under section 612 of the

**Environmental Protection Agency**

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Clean Air Act, substitutes for which submissions are incomplete may not be sold or used, regardless of other acceptability determinations, and the prohibition against sale of a new refrigerant will not end until 90 days after EPA determines the submission is complete.

In addition, the use of a) R-406A/"GHG"/"McCool", "GHG-HP", "GHG-X4/"Autofrost"/"Chill-It", "Hot Shot"/"Kar Kool", and "FREEZE 12" as CFC-12 substitutes in MVACs, and b) all refrigerants submitted for, and listed in, subsequent Notices of Acceptability as substitutes for CFC-12 in MVACs, must meet the following conditions:

1. Each refrigerant may only be used with a set of fittings that is unique to that refrigerant. These fittings (male or female, as appropriate) must be designed by the manufacturer of the refrigerant. The manufacturer is responsible to ensure that the fittings meet all of the requirements listed below, including testing according to SAE standards. These fittings must be designed to mechanically prevent cross-charging with another refrigerant, including CFC-12.

The fittings must be used on all containers of the refrigerant, on can taps, on recovery, recycling, and charging equipment, and on all air conditioning system service ports. A refrigerant may only be used with the fittings and can taps specifically intended for that refrigerant and designed by the manufacturer of the refrigerant. Using a refrigerant with a fitting designed by anyone else, even if it is different from fittings used with other refrigerants, is a violation of this use condition. Using an adapter or deliberately modifying a fitting to use a different refrigerant is a violation of this use condition.

Fittings shall meet the following criteria, derived from Society of Automotive Engineers (SAE) standards and recommended practices:

a. When existing CFC-12 service ports are retrofitted, conversion assemblies shall attach to the CFC-12 fitting with a thread lock adhesive and/or a separate mechanical latching mechanism in a manner that permanently prevents the assembly from being removed.

b. All conversion assemblies and new service ports must satisfy the vibration testing requirements of section 3.2.1 or 3.2.2 of SAE J1660, as applicable, excluding references to

SAE J639 and SAE J2064, which are specific to HFC-134a.

c. In order to prevent discharge of refrigerant to the atmosphere, systems shall have a device to limit compressor operation before the pressure relief device will vent refrigerant.

d. All CFC-12 service ports not retrofitted with conversion assemblies shall be rendered permanently incompatible for use with CFC-12 related service equipment by fitting with a device attached with a thread lock adhesive and/or a separate mechanical latching mechanism in a manner that prevents the device from being removed.

2. When a retrofit is performed, a label must be used as follows:

a. The person conducting the retrofit must apply a label to the air conditioning system in the engine compartment that contains the following information:

i. The name and address of the technician and the company performing the retrofit.

ii. The date of the retrofit.

iii. The trade name, charge amount, and, when applicable, the ASHRAE refrigerant numerical designation of the refrigerant.

iv. The type, manufacturer, and amount of lubricant used.

v. If the refrigerant is or contains an ozone-depleting substance, the phrase "ozone depleter".

vi. If the refrigerant displays flammability limits as measured according to ASTM E681, the statement "This refrigerant is FLAMMABLE. Take appropriate precautions."

b. The label must be large enough to be easily read and must be permanent.

c. The background color must be unique to the refrigerant.

d. The label must be affixed to the system over information related to the previous refrigerant, in a location not normally replaced during vehicle repair.

e. In accordance with SAE J639, testing of labels must meet ANSI/UL 969-1991.

f. Information on the previous refrigerant that cannot be covered by the new label must be rendered permanently unreadable.

3. No substitute refrigerant may be used to "top-off" a system that uses another refrigerant. The original refrigerant must be recovered in accordance with regulations issued under section 609 of the CAA prior to charging with a substitute.

**SOLVENT CLEANING SECTOR**

[Acceptable Subject to Use Conditions Substitutes]

Application	Substitute	Decision	Conditions	Comments
Electronics Cleaning w/CFC-113 and MCF.	HFC-4310mee	Acceptable .....	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.	

SOLVENT CLEANING SECTOR—Continued

[Acceptable Subject to Use Conditions Substitutes]

Application	Substitute	Decision	Conditions	Comments
Precision Cleaning w/CFC-113 and MCF.	HFC-4310mee	Acceptable .....	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.	

SOLVENT SECTOR

[Acceptable Subject to Narrowed Use Limits]

Application	Substitute	Decision	Comments
Electronics Cleaning w/CFC-113 and MCF.	Perfluoropolyethers.	Perfluoropolyethers are acceptable substitutes for CFC-113 and MCF in the precision cleaning sector for high performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	PFPEs have similar global warming profile to the PFCs, and the SNAP decision on PFPEs parallels that for PFCs.
Precision Cleaning w/CFC-113 and MCF.	Perfluoropolyethers.	Perfluoropolyethers are acceptable substitutes for CFC-113 and MCF in the precision cleaning sector for high performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	PFPEs have similar global warming profile to the PFCs, and the SNAP decision on PFPEs parallels that for PFCs.

Unacceptable Substitutes

End-use	Substitute	Decision	Comments
Electronics Cleaning w/CFC-113 and MCF.	HCFC-141b ...	Extension of existing unacceptability determination to grant existing uses in high-performance electronics permission to continue until January 1, 1997.	This determination extends the use date for HCFC-141b in solvent cleaning, but only for existing users in high-performance electronics and only for one year.
Precision Cleaning w/CFC-113 and MCF.	HCFC-141b ...	Extension of existing unacceptability determination to grant existing uses in precision cleaning permission to continue until January 1, 1997.	This determination extends the use date for HCFC-141b in solvent cleaning, but only for existing users in precision cleaning and only for one year.

AEROSOLS SECTOR

Acceptable Subject to Narrowed Use Limits

Application	Substitute	Decision	Comments
CFC-113, MCF, and HCFC-141b as aerosol solvents.	Perfluorocarbons	Perfluorocarbons are acceptable substitutes for aerosol applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	PFCEs have extremely long atmospheric lifetimes and high Global Warming Potentials. This decision reflects these concerns and is patterned after the SNAP decision on PFCs in the solvent cleaning sector.
	Perfluoropolyethers.	Perfluoropolyethers are acceptable substitutes for aerosol applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	PFPEs have similar global warming profile to the PFCs, and the SNAP decision on PFPEs parallels that for PFCs in the solvent cleaning sector.

Unacceptable Substitutes

End-use	Substitute	Decision	Comments
CFC-11, CFC-12, HCFC-22, and HCFC-142b as aerosol propellants.	SF6 .....	Unacceptable	SF6 has the highest GWP of all industrial gases, and other compressed gases meet user needs in this application equally well.

[61 FR 54040, Oct. 16, 1996]

APPENDIX E TO SUBPART G OF PART 82—UNACCEPTABLE SUBSTITUTES LISTED IN THE JANUARY 26, 1999 FINAL RULE, EFFECTIVE JANUARY 26, 1999

REFRIGERATION AND AIR-CONDITIONING SECTOR UNACCEPTABLE SUBSTITUTES

End-use	Substitute	Decision	Comments
All refrigeration and air-conditioning end uses .....	MT-31	Unacceptable .....	Chemical contained in this blend presents unacceptable toxicity risk.

[64 FR 3865, Jan. 26, 1999]

APPENDIX F TO SUBPART G OF PART 82—UNACCEPTABLE SUBSTITUTES LISTED IN THE JANUARY 26, 1999 FINAL RULE, EFFECTIVE JANUARY 26, 1999

REFRIGERATION AND AIR-CONDITIONING SECTOR UNACCEPTABLE SUBSTITUTES

End-use	Substitute	Decision	Comments
All refrigeration and air-conditioning end uses.	Hexafluoropropylene (HFP) and all HFP-containing blends.	Unacceptable .....	Presents unacceptable toxicity risk.

[64 FR 3868, Jan. 26, 1999]

APPENDIX G TO SUBPART G OF PART 82—SUBSTITUTES SUBJECT TO USE RESTRICTIONS AND UNACCEPTABLE SUBSTITUTES LISTED IN THE MARCH 3, 1999, FINAL RULE, EFFECTIVE APRIL 2, 1999.

REFRIGERANTS UNACCEPTABLE SUBSTITUTES

End-use	Substitute	Decision	Comments
CFC-12, R-502, and HCFC-22 Household Refrigeration, Transport Refrigeration, Vending Machines, Cold Storage Warehouses, and Retail Food Refrigeration, Retrofit and New.	Self-Chilling Cans-Using HFC-134a or HFC-152a.	Unacceptable	Unacceptably high greenhouse gas emissions from direct release of refrigerant to the atmosphere.

[64 FR 10378, Mar. 3, 1999]

APPENDIX H TO SUBPART G OF PART 82—SUBSTITUTES SUBJECT TO USE RESTRICTIONS AND UNACCEPTABLE SUBSTITUTES, EFFECTIVE MAY 28, 1999

*CFC-12 Automobile and Non-automobile Motor Vehicle Air Conditioners, Retrofit and New*

Criteria for Uniqueness of Fittings

(a) All fittings for alternative motor vehicle refrigerants must meet the following requirements:

(1) High-side screw-on fittings for each refrigerant must differ from high-side screw-on fittings for all other refrigerants, including CFC-12, and from low-side screw-on fittings for CFC-12;

(2) Low-side screw-on fittings for each refrigerant must differ from low-side screw-on fittings for all other refrigerants, including CFC-12;

(3) High-side screw-on fittings for a given refrigerant must differ from low-side screw-

on fittings for that refrigerant, to protect against connecting a low-pressure system to a high-pressure one;

(4) High-side quick-connect fittings for each refrigerant must differ from high-side quick-connect fittings for all other refrigerants, including CFC-12 (if they exist);

(5) Low-side quick-connect fittings for each refrigerant must differ from low-side quick-connect fittings for all other refrigerants, including CFC-12 (if they exist);

(6) High-side quick-connect fittings for a given refrigerant must differ from low-side quick-connect fittings for that refrigerant, to protect against connecting a low-pressure system to a high-pressure one;

(7) For each type of container, the fitting for each refrigerant must differ from the fitting for that type of container for all other refrigerants, including CFC-12.

(b) For screw-on fittings, "differ" means that either the diameter must differ by at least 1/16 inch or the thread direction must be