hydrocarbons, refrigerant blends, ammonia, perfluorocarbons (PFCs), and chlorine systems. The eighth category includes alternative technologies that generally do not rely on vapor compression cycles. Please refer to the final SNAP rule (59 FR 13044) for more discussion of these broad categories.

4. Listing Decisions

a. Acceptable. CFC–11, CFC–12, CFC– 113, CFC–114, CFC–115 Heat Transfer, Retrofit and Existing Equipment Designs.

(a) Perfluorocarbons. Perfluorocarbons are acceptable as substitutes for CFC-11, CFC-12, CFC-113, CFC-114, and CFC-115 in retrofitted heat transfer systems and in existing designs. Although EPA normally discusses acceptable substitutes in its Notices, this decision is the result of comments received on the proposal. PFCs covered by this determination are C₃F₈, C₄F₁₀, C₅F₁₂, C₅F₁₁NO, C₆F₁₄, C₆F₁₃NO, C₇F₁₆, C₇F₁₅NO, C₈F₁₈, C₈F₁₆O, and C₉F₂₁N. PFCs offer high dielectric resistance, noncorrosivity, thermal stability, materials compatibility, chemical inertness, low toxicity, and nonflammability. In addition, they do not contribute to ground-level ozone formation or stratospheric ozone depletion. The principal characteristic of concern for PFCs is that they have long atmospheric lifetimes and have the potential to contribute to global climate change. For instance, C_5F_{12} has a lifetime of 4,100 years and a 100-year GWP of 5,600. PFCs are also included in the Climate Change Action Plan, which broadly instructs EPA to use section 612 of the CAA, as well as voluntary programs, to control emissions. Despite these concerns, EPA is listing PFCs as acceptable in heat transfer applications because they may be the only substitutes that can satisfy safety or performance requirements. For example, a transformer may require very high dielectric strength, or a heat transfer system for a chlorine manufacturing process could require compatibility with the process stream.

In cases where users must adopt PFCs, they should make every effort to:

• Recover and recycle these fluids during servicing;

 Adopt maintenance practices that reduce leakage as much as is technically feasible;

• Recover these fluids after the end of the equipment's useful life and either recycle them or destroy them; and

 Continue to search for other longterm alternatives.

Users of PFCs should note that if other alternatives become available,

EPA could be petitioned to list PFCs as unacceptable due to the availability of other suitable substitutes. If such a petition were granted, EPA may grandfather existing uses upon consideration of cost and timing of testing and implementation of new substitutes. EPA urges industry to develop new alternatives for this enduse that do not contain substances with such high GWPs and long lifetimes.

b. Acceptable Subject to Use Conditions. (1) CFC–12 Automobile and Non-automobile Motor Vehicle Air Conditioners, Retrofit and New.

EPA is concerned that the existence of several substitutes in this end-use may increase the likelihood of significant refrigerant cross-contamination and potential failure of both air conditioning systems and recovery/recycling equipment. In addition, a smooth transition to the use of substitutes strongly depends on the continued purity of the recycled CFC-12 supply. In order to prevent cross-contamination and preserve the purity of recycled refrigerants, EPA is imposing several conditions on the use of all motor vehicle air conditioning refrigerants. For the purposes of this rule, no distinction is made between "retrofit" and "dropin" refrigerants; retrofitting a car to use a new refrigerant includes all procedures that result in the air conditioning system using a new refrigerant. It should be noted that EPA primarily reviews refrigerants based on environmental and health factors. Issues related to performance and durability fall outside the scope of SNAP review.

To meet the requirements under section 612, when retrofitting a CFC–12 system to use any substitute refrigerant, the following conditions must be met:

 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 used with all containers of the refrigerant, on can taps, on recovery, recycling, and charging equipment, and on all air conditioning system service ports. These fittings must be designed to mechanically prevent cross-charging with another refrigerant. A refrigerant may only be used with the fittings and can taps specifically intended for that refrigerant. Using an adapter or deliberately modifying a fitting to use a different refrigerant will be a violation of this use condition. In addition, fittings shall meet the following criteria. derived from Society of Automotive Engineers (SAE) standards and recommended practices:

—When existing CFC-12 service ports are to be 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.

- —All conversion assemblies and new service ports must satisfy the vibration testing requirements of sections 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.
- —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. This requirement is waived for systems that do not feature such a pressure relief device.
- —All CFC-12 service ports shall be retrofitted with conversion assemblies or 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.

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

- -The person conducting the retrofit must apply a label to the air conditioning system in the engine compartment that contains the following information:
- * The name and address of the technician and the company performing the retrofit;
- * The date of the retrofit;
- * The trade name, charge amount, and, when applicable, the ASHRAE numerical designation of the refrigerant;
- * The type, manufacturer, and amount of lubricant used;
- * If the refrigerant is or contains an ozone-depleting substance, the phrase "ozone depleter"; and
 * If the refrigerant displays flammability
- * If the refrigerant displays flammability limits as blended, measured according to ASTM E681, the statement "This refrigerant is FLAMMABLE. Take appropriate precautions."
- —This label must be large enough to be easily read and must be permanent.
- The background color must be unique to the refrigerant.
- —The label must be affixed to the system over information related to the previous refrigerant, in a location not normally replaced during vehicle repair.
- —Information on the previous refrigerant that cannot be covered by the new label must be permanently rendered unreadable.