ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 82

[FRL–5827–2]

RIN 2060–AG12

Protection of Stratospheric Ozone

AGENCY: Environmental Protection Agency.

ACTION: Notice of proposed rulemaking.

SUMMARY: This action proposes restrictions or prohibitions on substitutes for ozone depleting substances (ODSs) under the U.S. Environmental Protection Agency's (EPA) Significant New Alternatives Policy (SNAP) program. SNAP implements section 612 of the amended Clean Air Act of 1990, which requires EPA to evaluate substitutes for the ODSs to reduce overall risk to human health and the environment. Through these evaluations, SNAP generates lists of acceptable and unacceptable substitutes for each of the major industrial use sectors. The intended effect of the SNAP program is to expedite movement away from ozone depleting compounds while avoiding a shift into substitutes posing other environmental problems.

On March 18, 1994, EPA promulgated a final rulemaking setting forth its plan for administering the SNAP program, and issued decisions on the acceptability and unacceptability of a number of substitutes. In this Notice of Proposed Rulemaking (NPRM), EPA is issuing its preliminary decisions on the acceptability of certain substitutes not previously reviewed by the Agency. To arrive at determinations on the acceptability of substitutes, the Agency completed a cross-media evaluation of risks to human health and the environment by sector end-use.

DATES: Written comments or data provided in response to this document must be submitted by June 20, 1997.

ADDRESSES: Written comments and data should be sent to Docket A–91–42, Central Docket Section, South Conference Room 4, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. The docket may be inspected between 8:00 a.m. and 4:00 p.m. on weekdays. Telephone (202) 260–7549; fax (202) 260–4400. As provided in 40 CFR part 2, a reasonable fee may be charged for photocopying. To expedite review, a second copy of the comments should be sent to Carol Weisner, Stratospheric Protection Division, Office of Atmospheric Programs, U.S. EPA, 401 M Street, SW., 6205–J, Washington, DC 20460. Information designated as Confidential Business Information (CBI) under 40 CFR, part 2 subpart B must be sent directly to the contact person for this document. However, the Agency is requesting that all respondents submit a non-confidential version of their comments to the docket as well.

FOR FURTHER INFORMATION CONTACT: Carol Weisner at (202) 233–9193 or fax (202) 233–9665, Substitutes Analysis and Review Branch, Stratospheric Protection Division, Office of Atmospheric Programs, Office of Air and Radiation (6205–J), Washington, DC 20460. Overnight or courier deliveries should be sent to our 501–3rd Street, NW, Washington, DC 20001 location.

SUPPLEMENTARY INFORMATION:

I. Overview of This Action

This action is divided into six sections, including this overview:

II. Section 612 Program

A. Statutory Requirements

Section 612 of the Clean Air Act authorizes EPA to develop a program for evaluating alternatives to ozone-depleting substances. EPA is referring to this program as the Significant New Alternatives Policy (SNAP) program. The major provisions of section 612 are:

Rulemaking—Section 612(c) requires EPA to promulgate rules making it unlawful to replace any class I (chlorofluorocarbon, halon, carbon tetrachloride, methyl chloroform, methyl bromide, and hydrobromofluorocarbon) or class II (hydrochlorofluorocarbon) substance with any substitute that the Administrator determines may present adverse effects to human health or the environment where the Administrator has identified an alternative that (1) Reduces the overall risk to human health and the environment, and (2) is currently or potentially available.

Listing of Unacceptable/Acceptable Substitutes—Section 612(c) also requires EPA to publish a list of the substitutes unacceptable for specific uses. EPA must publish a corresponding list of acceptable alternatives for specific uses.

Petition Process—Section 612(d) grants the right to any person to petition EPA to add a substitute to or delete a substitute from the lists published in accordance with section 612(c). The Agency has 90 days to grant or deny a petition. Where the Agency grants the petition, EPA must publish the revised lists within an additional six months.

90-day Notification—Section 612(e) requires EPA to require any person who produces a chemical substitute for a class I substance to notify the Agency not less than 90 days before new or existing chemicals are introduced into interstate commerce for significant new uses as substitutes for a class I substance. The producer must also provide the Agency with the producer's unpublished health and safety studies on such substitutes.

Outreach—Section 612(b)(1) states that the Administrator shall seek to maximize the use of federal research facilities and resources to assist users of class I and II substances in identifying and developing alternatives to the use of such substances in key commercial applications.

Clearinghouse—Section 612(b)(4) requires the Agency to set up a public clearinghouse of alternative chemicals, product substitutes, and alternative manufacturing processes that are available for products and manufacturing processes which use class I and II substances.

B. Regulatory History

On March 18, 1994, EPA published the Final Rulemaking (FRM) (59 FR 13044) which described the process for administering the SNAP program and issued EPA's first acceptability lists for substitutes in the major industrial use sectors. These sectors include: Refrigeration and air conditioning; foam blowing; solvent cleaning; fire suppression and explosion protection; sterilants; aerosols; adhesives, coatings and inks; and tobacco expansion. These sectors comprise the principal industrial sectors that historically consume large volumes of ozone-depleting compounds.

The Agency defines a ''substitute'' as any chemical, product substitute, or alternative manufacturing process, whether existing or new, that could replace a class I or class II substance.

Anyone who produces a substitute must provide the Agency with health and safety studies on the substitute at least 90 days before introducing it into interstate commerce for significant new use as an alternative. This requirement applies to chemical manufacturers, but may include importers, formulators or end-users when they are responsible for introducing a substitute into commerce.

III. Proposed Listing of Substitutes

To develop the lists of unacceptable and acceptable substitutes, EPA conducts screens of health and

environmental risks posed by various substitutes for ozone-depleting compounds in each use sector. The outcome of these risks screens can be found in the public docket, as described above in the **ADDRESSES** portion of this document.

Under section 612, the Agency has considerable discretion in the risk management decisions it can make in SNAP. The Agency has identified five possible decision categories: Acceptable; acceptable subject to use conditions; acceptable subject to narrowed use limits; unacceptable; and pending. Fully acceptable substitutes (i.e. no restrictions) can be used for all applications within the relevant sector end-use. Conversely, it is illegal to replace an ODS with a substitute listed by SNAP as unacceptable. A pending listing represents substitutes for which the Agency has not received complete data or has not completed its review of the data.

After reviewing a substitute, the Agency may make a determination that a substitute is acceptable only if certain conditions of use are met to minimize risks to human health and the environment. Use of such substitutes in ways that are inconsistent with such use conditions renders these substitutes unacceptable.

Even though the Agency can restrict the use of a substitute based on the potential for adverse effects, it may be necessary to permit a narrowed range of use within a sector end-use because of the lack of alternatives for specialized applications. Users intending to adopt a substitute acceptable with narrowed use limits must ascertain that other acceptable alternatives are not technically feasible. Companies must document the results of their evaluation, and retain the results on file for the purpose of demonstrating compliance. This documentation shall include descriptions of substitutes examined and rejected, processes or products in which the substitute is needed, reason for rejection of other alternatives, e.g., performance, technical or safety standards, and the anticipated date other substitutes will be available and projected time for switching to other available substitutes. Use of such substitutes in application and end-uses which are not specified as acceptable in the narrowed use limit renders these substitutes unacceptable.

In this Notice of Proposed Rulemaking (NPRM), EPA is issuing its preliminary decision on the acceptability of certain substitutes not previously reviewed by the Agency. As described in the final rule for the SNAP program (59 FR 13044), EPA believes that notice-and-comment rulemaking is required to place any alternative on the list of prohibited substitutes, to list a substitute as acceptable only under certain use conditions or narrowed use limits, or to remove an alternative from either the list of prohibited or acceptable substitutes.

EPA does not believe that rulemaking procedures are required to list alternatives as acceptable with no limitations. Such listings do not impose any sanction, nor do they remove any prior license to use a substitute. Consequently, EPA adds substitutes to the list of acceptable alternatives without first requesting comment on new listings. Updates to the acceptable and pending lists are published as separate notices of acceptability in the **Federal Register**.

Parts A. through F. below present a detailed discussion of the proposed substitute listing determinations by major use sector. Tables summarizing listing decisions in this Notice of Proposed Rulemaking are in Appendix E. The comments contained in Appendix E to Subpart G of 40 CFR part 82 provide additional information on a substitute. Since comments are not part of the regulatory decision, they are not mandatory for use of a substitute. Nor should the comments be considered comprehensive with respect to other legal obligations pertaining to the use of the substitute. However, EPA encourages users of acceptable substitutes to apply all comments in their application of these substitutes. In many instances, the comments simply allude to sound operating practices that have already been identified in existing industry and/or building-code standards. Thus, many of the comments, if adopted, would not require significant changes in existing operating practices for the affected industry.

A. Refrigeration and Air Conditioning—Class I

1. *Acceptable Subject to Use Conditions.* a. CFC–12 Automobile and Non-automobile Motor Vehicle Air Conditioners, Retrofit and New (1) Notification Requirements for Existing Refrigerants.

In previous rulemakings, EPA has imposed conditions on the use of MVAC refrigerants, including the requirement that they be used with unique fittings and that vehicles be labeled when retrofitted to a new refrigerant. In addition, new refrigerants must be submitted with designs for fittings, and samples of both fittings and labels. EPA now proposes to apply these submission requirements to the following existing refrigerants: HFC–134a, FRIGC, Freezone, Ikon, R–406A, GHG–X4, Hot Shot, GHG–HP, and Freeze-12, each of which was previously listed as acceptable subject to use conditions. In accordance with the requirements for new refrigerants, EPA proposes that the manufacturers must submit, within 30 days of the effective date of the final rule resulting from this NPRM:

- Designs for service ports and hose connections, including both high-side and low-side fittings;
- Sample fittings of each type;
- Sample labels, printed in the unique color chosen by the manufacturer.

EPA will review the fittings and test for cross-connections between the new fitting and existing fittings for other refrigerants. At the same time, EPA will compare the background color of the sample label to those of other refrigerants. If the fittings are unique and cannot be mechanically cross-threaded, and the label color is unique to that refrigerant, EPA will issue a letter to the manufacturer confirming that the fittings and labels meet the use conditions. This confirmation letter will be sent within 30 days of receipt of the submission. EPA will then update a package of materials containing specifications for existing fittings. This package will be provided to manufacturers of new refrigerants and others who request it, to lower the risk of duplicating fittings already in use.

If the fittings or the label color are not, in fact, unique, EPA will issue a letter to the manufacturer indicating so. Continued use of the refrigerant with the non-unique fittings will constitute a violation of the unique fittings use condition.

EPA does not anticipate that these provisions will affect the majority of the existing refrigerants because the manufacturers have already submitted designs and sample labels and fittings for review. However, it is necessary to formalize these submission requirements to level the playing field and ensure that EPA has official submissions on which to base future actions. For example, EPA will rely on designs and samples to determine whether the submitted versions are actually being used on cars. Similarly, EPA will rely on the submissions to determine whether a given fitting satisfies the uniqueness criteria proposed below.

(2) Criteria for Uniqueness of Fittings. In previous rulemakings, EPA has relied on refrigerant manufacturers to design unique fittings with no further guidance. In this NPRM, EPA clarifies minimum criteria for uniqueness. EPA proposes that all fittings for alternative

refrigerants must meet the following requirements:

- High-side screw-on fittings for each refrigerant must differ from high-side screw-on fittings for all other refrigerants, including CFC–12;
- Low-side screw-on fittings for each refrigerant must differ from low-side screw-on fittings for all other refrigerants, including CFC–12;
- 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;
- High-side screw-on fittings for each alternative refrigerant must differ from low-side screw-on fittings for CFC–12;
- High-side quick-connect fittings for each refrigerant must differ from high-side quick-connect fittings for all other refrigerants, including CFC–12;
- Low-side quick-connect fittings for each refrigerant must differ from low-side quick-connect fittings for all other refrigerants, including CFC–12;
- 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;
- 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.

For screw-on fittings, EPA proposes that ''differ'' means that either the diameter must differ by at least 1/16 inch or the thread direction must be reversed (i.e. right-handed vs. left-handed). Simply changing the thread pitch is not sufficient. An additional requirement for screw-on fittings, and the essential one for quick-connect fittings, is that a person using normal force and normal tools (including wrenches) must not be able to cross-connect fittings. Following are some examples:

- A 3/8 (6/16) inch outside diameter screw-on fitting with a right-hand thread differs from a 5/16 inch outside diameter screw-on fitting with a right-hand thread;
- A 3/8 inch outside diameter screw-on fitting with a left-hand thread differs from a 3/8 inch outside diameter screw-on fitting with a right-hand thread;
- A 3/8 inch outside diameter screw-on fitting with a right-hand thread pitch of 18 threads/inch does not differ from a 3/8 inch outside screw-on diameter fitting with a right-hand thread pitch of 24 threads/inch;
- A quick-connect fitting differs from another quick-connect fitting if all combinations of the same type male and female parts (high, low, small can, 30-lb. cylinder) will not connect using normal tools.

(i) All previously listed refrigerants and all future refrigerants. For refrigerants previously listed as acceptable subject to use conditions, and for refrigerants submitted in the future, the use conditions in force for retrofitted systems are proposed to apply to new vehicles. In addition, the criteria for uniqueness of fittings discussed above are proposed to apply, and all labels must meet UL Standard 969–1995.

Since only HFC–134a is currently being used in new cars, the use conditions were originally worded in such a way that a reasonable interpretation would exclude their applicability to new cars. This proposal extends the unique fittings and labels requirements to new cars. EPA does not anticipate that this clarification will result in any additional burden, since all new cars already use HFC–134a fittings and labels. However, EPA invites comment on this proposal. Note that the use conditions above replace only the fittings, labeling, and ''top-off'' conditions applicable to previously listed refrigerants. Other conditions, such as the requirement to replace existing hoses with barrier hoses, still apply to various refrigerants as listed in the original rule.

In addition, as explained above, EPA believes it is necessary to provide criteria for the uniqueness of fittings. This use condition will apply these criteria formally to existing refrigerants. Finally, the UL standard relates to permanence of labels, and is already part of the applicable Society of Automotive Engineers (SAE) standard.

(ii) HFC–134a, FRIGC FR–12, Freezone, Ikon, R–406A, GHG–X4, Hot Shot, GHG–HP, and Freeze-12. *For these refrigerants, all of which have previously been found acceptable subject to use conditions, the submission requirements discussed above are proposed to apply.*

As discussed above, EPA believes that applying these requirements formally will level the playing field between existing refrigerants and new submissions. In addition, formal submissions of designs and sample labels and fittings will allow EPA to monitor compliance with the other use conditions.

2. *Unacceptable Substitutes.* a. NARM–502.

NARM–502, which consists of HCFC–22, HFC–23, and HFC–152a, is proposed unacceptable as a substitute for R–502 in all new and retrofitted end-uses.

HFC–23 has a lifetime of 250 years, and its 100-year global warming potential (GWP) is 11,700. Both of these characteristics are considerably higher than other HFCS and HCFCS. Numerous other acceptable R–502 substitutes do not contain such high global warming components. The Climate Change Action Plan directs EPA to reduce the use of high global warming gases. Therefore, the use of this blend as an R–502 substitute is proposed unacceptable.

b. NARM–12. NARM–12, which consists of HCFC–22, HFC–23, and HFC–152a, is proposed unacceptable as a substitute for CFC–12 in all new and retrofitted end-uses.

HFC–23 has a lifetime of 250 years, and its 100-year GWP is 11,700. Both of these characteristics are considerably higher than other HFCs and HCFCs. Numerous other acceptable R–502 substitutes do not contain such high global warming components. The Climate Change Action Plan directs EPA to reduce the use of high global warming gases. Therefore, the use of this blend as an R–502 substitute is proposed unacceptable.

B. Refrigeration and Air Conditioning—Class II

1. *Unacceptable Substitutes.* a. NARM–22. NARM–22, which consists of HCFC–22, HFC–23, and HFC–152a, is proposed unacceptable as a substitute for HCFC–22 in all new and retrofitted end-uses.

NARM–22 contains HCFC–22. EPA does not believe it is appropriate to replace a class II refrigerant with a blend containing a class II refrigerant. Listing this blend as acceptable would be a barrier to a smooth transition away from ozone-depleting refrigerants. Other alternatives to HCFC–22 are already acceptable that do not contain any ozone-depleting refrigerants.

In addition, HFC–23 has a lifetime of 250 years, and its 100-year GWP is 11,700. Both of these characteristics are considerably higher than other HFCs and HCFCs. Other acceptable HCFC–22 substitutes do not contain such high global warming components. The 1993 Climate Change Action Plan directs EPA to reduce the use of high global warming gases. For this reason, and the fact that NARM–22 contains HCFC–22, the use of this blend as an HCFC–22 substitute is proposed unacceptable.

C. Solvents Cleaning

1. Chlorobromomethane. Chlorobromomethane (CBM) has been used as a fire suppressant and has the designation of Halon 1011. EPA has received notification that it can also be used as a solvent and a potential

substitute for the ozone depleting solvents CFC–113, methyl chloroform (MCF) and HCFC–141b. EPA received a SNAP submission requesting consideration of CBM as an acceptable substitute for CFC–113 and MCF in solvents cleaning of metals and electronics and in precision cleaning. Analysis of the available toxicity data base for CBM raises significant questions concerning its suitability as a solvent substitute for CFC–113, or methyl chloroform, or HCFC–141b in metals cleaning, electronics cleaning, and precision cleaning; and as a solvent agent in aerosols and in adhesives, coatings and inks. In a subchronic study, at a dose level of 500 parts per million (ppm), adverse effects were evident in the livers of rats. At 1000 ppm, both guinea pigs and rabbits showed decreased spermatogenesis, but no studies of reproductive or developmental effects have been conducted. In addition, mutagenicity tests with CBM in microorganisms yielded consistently positive results. In mammalian systems, CBM induced sister chromatid exchanges. Thus the mutagenic effects of CBM are unmistakable.

In 1989, EPA established a one day health advisory for water contaminated with CBM at 50 ppm. A longer term health advisory was established at 4.57 ppm for this compound in drinking water. OSHA established an occupational Permissible Exposure Limit (PEL) of 200 ppm based on the ''grandfathered'' Threshold Limit Value (TLV) which dates back to 1961. This compound was not reviewed by OSHA in the 1989 proposed revision process. In 1991, the only use noted for this chemical by American Conference of Governmental Industrial Hygienists (ACGIH) was as a liquid (streaming agent) fire suppressant. They recommended an 8 hour TLV of 200 ppm consistent with the PEL. The potential widespread use of CBM as a solvent substitute in the light of its toxicity profile and significant data gaps imply a much lower workplace limit. Based upon the lowest observed adverse effect level of 500 ppm in rats, the SNAP evaluation suggests a more appropriate occupational exposure limit (OEL) to lie in the range of 2 and 5 ppm, making this compound unsuitable for use as a solvent.

Recent authoritative research establishes an ozone depletion potential (ODP) range for CBM of 0.17 to 0.28. Other alternatives exist with much lower or no ODP and do not pose a comparable risk. As a result of these recent ODP findings and the potential widespread use of CBM in occupational settings unable to meet an OEL of 5 ppm, EPA proposes this agent as unacceptable. Relevant reports and analyses on these issues have been placed in the public docket for this SNAP submission.

2. Acceptable Subject to Use Conditions. a. Metals Cleaning.

(1) HFC–4310mee.

HFC–4310mee is proposed as an acceptable substitute for CFC–113 and methyl chloroform (MCF) in metals cleaning subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling. This chemical does not deplete the ozone layer since it does not contain chlorine or bromine. Review under the SNAP program and the PMN program determined that a time-weighted average workplace exposure standard of 200 ppm and a workplace exposure ceiling of 400 ppm would be adequately protective of human health and that companies can meet these exposure limits using the types of equipment specified in the product safety information provided by the chemical manufacturer.

These workplace standards are designed to protect worker safety until the Occupational Health and Safety Administration (OSHA) sets its own standards under Pub. L. 91–596. The existence of the EPA standards in no way bars OSHA from standard-setting under OSHA authorities as defined in Public Law 91–596.

3. Unacceptable Substitutes. a. Metals Cleaning.

(1) Chlorobromomethane.

Chlorobromomethane is proposed unacceptable as a substitute for CFC–113, methyl chloroform (MCF), and HCFC–141b in metals cleaning. Recent authoritative research establishes an ozone depletion potential (ODP) range for CBM of 0.17 to 0.28, and toxicity concerns exist based on potential widespread use in occupational settings not meeting an appropriate OEL of 5 ppm. Other alternatives exist with much lower ODP and do not pose a comparable risk.

b. Electronics Cleaning.

(1) Chlorobromomethane.

Chlorobromomethane is proposed unacceptable as a substitute for CFC–113, methyl chloroform, and HCFC–141b in electronics cleaning. Recent authoritative research establishes an ODP range for CBM of 0.17 to .28, and toxicity concerns exist based on potential widespread use in occupational settings not meeting an appropriate OEL of 5 ppm. Other alternatives exist with much lower ODP and do not pose a comparable risk. For example, hydrofluoroethers (HFE) and HFC–4310 mee do not contain chlorine and have no ODP.

c. Precision Cleaning.

(1) Chlorobromomethane.

Chlorobromomethane is proposed unacceptable as a substitute for CFC–113, MCF, and HCFC–141b in precision cleaning. Recent authoritative research establishes an ODP range for CBM of 0.17 to 0.28, and toxicity concerns exist based on potential widespread use in occupational settings not meeting an appropriate OEL of 5 ppm. Other alternatives exist with much lower ODP and do not pose a comparable risk. For example, hydrofluoroethers (HFE) and HFC–4310 mee do not contain chlorine and have no ODP.

D. Fire Suppression and Explosion Protection

1. Chlorobromomethane. As discussed in *Solvents Cleaning* above, CBM has been used for fire suppression and explosion inertion, and is designated Halon 1011. In the fire suppression and explosion protection sector, Halon 1011 has been used as a total flooding agent, in lieu of Halon 1301, for the purpose of preventing fires in the engine nacelles of aircraft, principally in the military. EPA understands the use of Halon 1011 for this purpose has been extremely limited, and demand for its future use is likely to be very small, given other alternatives. Recent authoritative research establishes an ODP range for CBM of 0.17 to 0.28. Other alternatives exist for total flooding applications with much lower or no ODP and do not pose a comparable risk. For example, HFC–134a and HFC–227ea, as well as several inert gases, have no ODP. As a result of these recent ODP findings, EPA proposes this agent unacceptable as a substitute for Halon 1301.

2. Petition. EPA has received a Petition asking for reconsideration of the wording of use conditions for PFCs and other long-lived gases. The Petitioner believes that while it is EPA's stated intent that PFCs be used as the agent of last resort when no other agent is acceptable due to performance or safety requirements, the regulatory language is unclear, potentially resulting in some users adopting PFCs inappropriately. The regulatory language in the March 18, 1994, Rulemaking (59 FR 13044, 13159) states the following:

> C_4F_{10} is acceptable as a Halon 1301 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may approach cardiosensitization levels or result in other

unacceptable health effects under normal operating conditions.

This same language applies for use of other PFCs in this sector as well.

EPA has discussed this language in rulemakings, letters and public forums to ensure that the public understands that a PFC may be used if no other commercially available agent will provide adequate protection against the specific fire hazard given the technical or environmental constraints of the application or if the use of other agents in the application in question would exceed safe toxicity levels. For halocarbons, cardiac sensitization is the primary endpoint of concern, and for inert gases, hypoxia is the relevant endpoint. The SNAP rulemaking describes the concentrations at which each agent can be safely used.

The Petitioner suggests the following changes to the use conditions for long-lived gases to allay confusion:

PFCs or other long-lived gases may only be used ''* * * (1) when physical or chemical properties necessitate their use, or (2) when the use of another SNAP accepted alternative would result in exposures beyond its applicable use conditions (*e.g.*, below the minimum O_2 content, egress times greater than 30 seconds with design concentrations greater than LOAEL,) or (3) when the use of other SNAP accepted alternatives would permanently impair the health of those in the discharge area.

EPA agrees that the choice of words ''may approach cardiosensitizations levels'' may be confusing to the public and thus proposes to accept the petitioner's suggestion by substituting the phrase ''may result in failure to meet applicable use conditions.'' Applicable use conditions refer to the cardiac sensitization levels stipulated in the SNAP use conditions for halocarbons, minimum oxygen and maximum CO_2 levels stipulated in the use conditions for inert gas systems, or other use conditions as may be stipulated in a SNAP rulemaking. The new language is consistent with the intent of the current conditions as it was discussed in the preamble to the March 18, 1994, rulemaking. Thus, this change reflects no change in policy but only clarification, and would apply to all PFCs currently listed under the SNAP program, including C_4F_{10}, C_6F_{14}, and C_3F_8. The use condition proposed for PFCs would read as follows:

C_xF_y is proposed acceptable as a Halon [1211 or 1301] substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

The Petitioner did not make a cogent case for changing the phrase ''or result in other unacceptable health effects under normal operating conditions'' and thus EPA rejects suggested changes to that phrase at this time.

3. *Proposed Acceptable Subject to Use Conditions.* a. Total Flooding Agents.

(1) C_3F_8.

C_3F_8 is proposed acceptable as a Halon 1301 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

See the preceding discussion of the changes made to the use condition on this agent.

(2) C_4F_{10}.

C_4F_{10} is proposed acceptable as a Halon 1301 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

See the preceding dicussion of the changes made to the use condition on this agent.

(3) HFC–236fa.

HFC–236fa is proposed acceptable as a Halon 1301 substitute when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step. HFC–236fa may be used in explosion suppression and explosion inertion applications, and may be used in fire suppression applications where other non-PFC agents or alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

In the event of the development of acceptable alternatives which EPA finds should not only replace Halon 1301 and HFC–236a in new systems, EPA may grandfather existing uses but only to the extent warranted by cost and timing as outlined in the original SNAP rule discussion of grandfathering of unacceptable substitutes (59 FR 13057).

As discussed in the initial SNAP rulemaking (58 FR 13044, March 18, 1994), until OSHA establishes applicable workplace requirements, total flooding agents are acceptable by the Agency for use in occupied areas only under the following conditions:

1. Where egress from an area cannot be accomplished within one minute, the employer shall not use the agent in concentrations exceeding its NOAEL.

2. Where egress takes greater than 30 seconds but less than one minute, the employer shall not use the agent in a concentration greater than its LOAEL.

3. Agent concentrations greater than the LOAEL are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 seconds.

The employer shall assure that no unprotected employees enter the area during agent discharge. These conditions will no longer apply once OSHA establishes applicable workplace requirements.

The cardiac sensitization NOAEL of HFC–236fa is 10.0 per cent and its LOAEL is 15 per cent. Cup burner tests with heptane indicate that the extinguishment concentration for this agent is 5.3 per cent, thus making its calculated design concentration 6.4 per cent. Compared to the cardiac sensitization values, these concentrations provide a sufficient margin of safety for use in a normally occupied area.

In the March 18, 1994 final SNAP rule (58 FR 13044), EPA required manufacturers to submit information on manufacturing processes to allow an assessment of the risks posed to the general public and workers. EPA clarified in that action that acceptability determinations made on the basis of one company's submission would apply to the same chemical produced by other manufacturers, obviating the need for duplicative reporting requirements and review. However, manufacturers who believe a given manufacturing process may pose additional risks beyond those posed by other processes were required to alert EPA to that increased hazard. The February 8, 1996 (61 FR 4736) Notice of Acceptability specifically discussed the manufacturing process used in making HFC–236fa, and that discussion is repeated below.

EPA is aware of several methods for manufacturing HFC–236fa, including one that produces HFC–236fa directly from PFIB. PFIB is an extremely toxic substance that could pose risks in very small concentrations. Thus, EPA believes it is appropriate to distinguish among the different methods for producing HFC–236fa. This acceptability determination does not prohibit the manufacture of HFC–236fa directly from PFIB. Rather, it finds

acceptable the production of HFC–236fa in processes that do not convert PFIB directly to HFC–236fa in a single step. If a manufacturer wishes to produce HFC–236fa directly from PFIB, it must submit that process to EPA for review under SNAP.

HFC–236fa can replace Halon 1301 at a ratio of 1.3 by weight and 1.5 by volume. Due to its relatively high boiling point of minus 1.6 degrees centigrade, this agent may not be suitable in a low temperature environment. Its greatest potential appears to be in explosion suppression and in applications benefited by a misting or liquid discharge.

HFC–236fa does not deplete stratospheric ozone, however, it has an atmospheric lifetime of 250 years and a 100-year GWP of 6300. Concerns have been raised about this agent's potential atmospheric effects. Thus, this agent should be handled so as to minimize unnecessary emissions. Ways to minimize emissions include: Avoiding discharge testing and training; providing a high level of maintenance to avoid leaks and accidental discharges; recovering HFC–236fa from the fire protection equipment in conjunction with testing or servicing; and destroying HFC–236fa or recycling it for later use.

While HFC–236fa may be used without prejudice in explosion protection applications, before users adopt it for general fire suppression applications they must first ascertain that other non-PFC substitutes or alternatives are not technically feasible due to performance or safety requirements. That is, if a PFC is the only other substitute that is technically feasible due to performance or safety requirements, then this agent may be used in a general fire suppression application. Potential users are expected to evaluate the technical feasibility of other non-PFC substitutes or alternatives to determine their adequacy to control the particular fire risk. Such assessment may include an evaluation of the performance or functional effectiveness of the non-PFC agents' effectiveness for the intended applications as well as the risk to personnel potentially exposed to the agents. Similarly, use of HFC–236fa due to toxicological concerns would be appropriate where use of other non-PFC substitutes or alternatives would violate the workplace safety use conditions set forth in the SNAP rulemakings (58 FR 13044).

To assist users in their evaluation for general fire suppression applications, EPA has prepared a list of vendors manufacturing halon substitutes and alternatives. Although users are not required to report the results of their investigation to EPA, companies must retain these results in company files for future reference.

4. *Proposed Acceptable Subject to Narrowed Use Limits.* a. Streaming Agents. (1) C_6F_{14}

C_6F_{14} is proposed acceptable as a Halon 1211 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

See the preceding discussion of the changes made to the use condition on this agent.

(2) HFC–236fa.

HFC–236fa is acceptable as a Halon 1211 substitute in non-residential applications when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step. The cardiac sensitization NOAEL of HFC–236fa is 10.0 per cent and its LOAEL is 15 per cent. Cup burner tests with heptane indicate that the extinguishment concentration for this agent is 5.3 per cent. Compared to Halon 1211, HFC–236fa has a weight equivalence of 1.1 to 1.5.

As discussed above, HFC–236fa does not deplete stratospheric ozone, however, it has an atmospheric lifetime of 250 years and a 100-year GWP of 6300. Concerns have been raised about this agent's potential atmospheric effects. Thus, EPA recommends that users minimize unnecessary emissions by limiting testing only to that which is essential to meet safety or performance requirements; recovering HFC–236fa from the fire protection equipment in conjunction with testing or servicing; and destroying HFC–236fa or recycling it for later use. EPA encourages manufacturers to develop aggressive product stewardship programs to help users avoid such unnecessary emissions.

Further, this agent may not be used in residential applications, e.g., by a private individual in applications in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use in watercraft or aircraft is excluded from the definition of residential use.

(3) HFC–227ea.

HFC–227ea is acceptable as a Halon 1211 substitute in nonresidential applications. The weight equivalence of this agent is 1.66 pounds per pound of Halon 1211. It has a cardiac sensitization NOAEL of 9.0 per cent, and a LOAEL of 10.5% or greater. Its cup burner extinguishment value is 5.8%.

This agent has no ozone depletion potential, a 100-year GWP of 2050 relative to carbon dioxide, and an atmospheric lifetime of 31 years. It is already listed as acceptable for use in total flooding applications as an alternative to Halon 1301 (March 18, 1994, 59 FR 13107).

b. Total Flooding Agents.

(1) C_3F_8.

C_3F_8 is proposed acceptable as a Halon 1301 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

See the preceding discussion of the changes made to the use condition on this agent.

(2) C_4F_{10}. C_4F_{10} is proposed acceptable as a Halon 1301 substitute where other alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.

See the preceding discussion of the changes made to the use condition on this agent.

(3) HFC–236fa. HFC–236fa is acceptable as a Halon 1301 substitute when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step. HFC–236fa may be used in explosion suppression and explosion inertion applications, and may be used in fire suppression applications where other non-PFC agents or alternatives are not technically feasible due to performance or safety requirements: (a) Due to their physical or chemical properties or (b) where human exposure to the agents may result in failure to meet applicable use conditions or result in other unacceptable health effects under normal operating conditions. Please see the section on ''Proposed Acceptable Subject to Use Conditions'' for a complete discussion of this agent. This agent is subject to the use conditions delineated in the above section.

5. *Unacceptable Substitutes.* a. Total Flooding Agents. (1) Chlorobromomethane.

Chlorobromomethane is proposed unacceptable as a substitute for Halon 1301 in total flooding applications. Recent authoritative research establishes an ODP range for CBM of 0.17 to 0.28. Other alternatives exist for total flooding applications with lower or no ODP and do not pose a comparable risk. For example, HFC–134a and HFC–227ea, as well as several inert gases, have no ODP.

E. Aerosols

1. *Chlorobromomethane.* Chlorobromomethane (CBM) has been used as a fire suppressant and has the designation of Halon 1011. EPA has received notification that it can also be used as a solvent and a potential substitute for the ozone depleting solvents CFC–113, methyl chloroform (MCF) and HCFC–141b. EPA received a SNAP submission requesting consideration of CBM as an acceptable substitute for CFC–113 and MCF in solvents cleaning of metals and electronics and in precision cleaning. Analysis of the available toxicity data base for CBM raises significant questions concerning its suitability as a solvent substitute for CFC–113, or methyl chloroform, or HCFC–141b in metals cleaning, electronics cleaning, and precision cleaning; and as a solvent agent in aerosols and in adhesives, coatings and inks. In a subchronic study, at a dose level of 500 ppm, adverse effects were evident in the livers of rats. At 1000 ppm, both guinea pigs and rabbits showed decreased spermatogenesis, but no studies of reproductive or developmental effects have been conducted. In addition, mutagenicity tests with CBM in microorganisms yielded consistently positive results. In mammalian systems, CBM induced sister chromatid exchanges. Thus the mutagenic effects of CBM are unmistakable.

In 1989, EPA established a one day health advisory for water contaminated with CBM at 50 ppm. A longer term health advisory was established at 4.57 ppm for this compound in drinking water. OSHA established an occupational Permissible Exposure Limit (PEL) of 200 ppm based on the ''grandfathered'' Threshold Limit Value (TLV) which dates back to 1961. This compound was not reviewed by OSHA in the 1989 proposed revision process. In 1991, the only use noted for this chemical by American Conference of Governmental Industrial Hygienists (ACGIH) was as a liquid (streaming agent) fire suppressant. They recommended an 8 hour TLV of 200 ppm consistent with the PEL. The potential widespread use of CBM as a solvent substitute in the light of its toxicity profile and significant data gaps imply a much lower workplace limit. Based upon the lowest observed adverse effect level of 500 ppm in rats, the SNAP evaluation suggests a more appropriate occupational exposure limit (OEL) to lie in the range of 2 and 5 ppm, making this compound unsuitable for use as a solvent.

Recent authoritative research establishes an ozone depletion potential (ODP) range for CBM of 0.17 to 0.28. Other alternatives exist with much lower or no ODP and do not pose a comparable risk. As a result of these recent ODP findings and the potential widespread use of CBM in occupational settings unable to meet an OEL of 5 ppm, EPA proposes this agent as unacceptable.

2. Acceptable Subject to Use Conditions. a. Solvents. (1) HFC–4310mee HFC–4310mee is proposed as an acceptable substitute for CFC–113 and methyl chloroform (MCF) in aerosols subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling. This chemical does not deplete the ozone layer since it does not contain chlorine or bromine. Review under the SNAP program and the PMN program determined that a time-weighted average workplace exposure standard of 200 ppm and a workplace exposure ceiling of 400 ppm would be adequately protective of human health. Based on the results of exposure assessment studies, it is EPA's opinion that companies can meet the 200 ppm limit of the HFC–4310mee in defluxing and cleaning providing that the standard operating procedures and employee work habits are conducted in accordance with the procedures specified in the product safety information provided by the chemical manufacturer.

These workplace standards are designed to protect worker safety until the Occupational Health and Safety Administration (OSHA) sets its own standards under Pub. L. 91–596. The existence of the EPA standards in no way bars OSHA from standard-setting under OSHA authorities as defined in Pub. L. 91–596.

(2) HCFC–225 ca/cb. HCFC–225 ca/cb is proposed as an acceptable substitute for CFC–113 and methyl chloroform (MCF) in aerosols subject to a 25 ppm time-weighted average workplace exposure standard of the HCFC–225ca isomer. HCFC–225 ca/cb HCFC–225 ca/cb blend is offered as a 45%–ca/55%–cb blend. The company-set exposure limit of the -ca isomer is 25 ppm. The company-set exposure limit of the -cb isomer is 250 ppm. Based on the results of exposure assessment studies, it is EPA's opinion that companies can meet the 25 ppm limit of the HCFC–225 ca isomer in defluxing and cleaning providing that the standard operating procedures and employee work habits are conducted in accordance with the procedures specified in the product safety information provided by the chemical manufacturer.

These workplace standards are designed to protect worker safety until the Occupational Health and Safety Administration (OSHA) sets its own standards under Pub. L. 91–596. The existence of the EPA standards in no way bars OSHA from standard-setting under OSHA authorities as defined in Pub. L. 91–596.

3. Unacceptable Substitutes. a. Solvents. (1) Chlorobromomethane Chlorobromomethane is proposed unacceptable as a substitute for CFC–113 and methyl chloroform in aerosols. Recent authoritative research establishes an ODP range for CBM of 0.17 to 0.28, and toxicity concerns exist based on potential widespread use in occupational settings not meeting an appropriate OEL of 5 ppm. Other alternatives exist with much lower ODP and do not pose a comparable risk.

F. Adhesives, coatings and inks

1. Chlorobromomethane. Chlorobromomethane (CBM) has been used as a fire suppressant and has the designation of Halon 1011. EPA has received notification that it can also be used as a solvent and a potential substitute for the ozone-depleting solvents CFC–113, methyl chloroform (MCF) and HCFC–141b. EPA received a SNAP submission requesting consideration of CBM as an acceptable substitute for CFC–113 and MCF in solvents cleaning of metals and electronics and in precision cleaning. Analysis of the available toxicity data base for CBM raises significant questions concerning its suitability as a solvent substitute for CFC–113, or methyl chloroform, or HCFC–141b in metals cleaning, electronics cleaning, and precision cleaning; and as a solvent agent in aerosols and in adhesives, coatings and inks. In a subchronic study, at a dose level of 500 ppm, adverse effects were evident in the livers of rats. At 1000 ppm, both guinea pigs and rabbits showed decreased spermatogenesis, but no studies of reproductive or developmental effects have been conducted. In addition, mutagenicity tests with CBM in microorganisms yielded consistently positive results. In mammalian systems, CBM induced sister chromatid

exchanges. Thus the mutagenic effects of CBM are unmistakable.

In 1989, EPA established a one day health advisory for water contaminated with CBM at 50 ppm. A longer term health advisory was established at 4.57 ppm for this compound in drinking water. OSHA established an occupational Permissible Exposure Limit (PEL) of 200 ppm based on the ''grandfathered'' Threshold Limit Value (TLV) which dates back to 1961. This compound was not reviewed in the 1989 proposed revision process. In 1991, the only use noted for this chemical by American Conference of Governmental Industrial Hygienists (ACGIH) was as a liquid (streaming agent) fire suppressant. They recommended an 8 hour TLV of 200 ppm consistent with the PEL. The potential widespread use of CBM as a solvent substitute in the light of its toxicity profile and significant data gaps imply a much lower workplace limit. Based upon the lowest observed adverse effect level of 500 ppm in rats, the SNAP evaluation suggests a more appropriate occupational exposure limit (OEL) to lie in the range of 2 and 5 ppm, making this compound unsuitable for use as a solvent.

Recent authoritative research establishes an ozone depletion potential (ODP) range for CBM of 0.17 to 0.28. Other alternatives exist with much lower or no ODP and do not pose a comparable risk. As a result of these recent ODP findings and the potential widespread use of CBM in occupational settings unable to meet an OEL of 5 ppm, EPA proposes this potential substitute, CBM, as unacceptable.

2. Unacceptable Substitutes. a. Solvents. (1) Chlorobromomethane. Chlorobromomethane is proposed unacceptable as a substitute for CFC–113 and methyl chloroform in adhesives, coatings and inks. Recent authoritative research establishes an ODP range for CBM of 0.17 to 0.28, and toxicity concerns exist based on potential widespread use in occupational settings not meeting an appropriate OEL of 5 ppm. Other alternatives exist with much lower ODP and do not pose a comparable risk. For example, water-based formulations and other acceptable solvent formulations with no ODP are broadly used and readily available.

IV. Administrative Requirements

A. Executive Order 12866

Under Executive Order 12866, (58 FR 51735; October 4, 1993) the Agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.''

Pursuant to the terms of Executive Order 12866, OMB notified EPA that it considers this a ''significant regulatory action'' within the meaning of the Executive Order and EPA submitted this action to OMB for review. Changes made in response to OMB suggestions or recommendations have been documented in the public record.

B. Unfunded Mandates Act

Section 202 of the Unfunded Mandates Reform Act of 1995 requires EPA to prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by state, local, and tribal governments, in aggregate, or by the private sector, of $100 million or more in any one year. Section 203 requires the Agency to establish a plan for obtaining input from and informing any small governments that may be significantly or uniquely affected by the rule. Section 205 requires that regulatory alternatives be considered before promulgating a rule for which a budgetary impact statement is prepared. The Agency must select the least costly, most cost effective, or least burdensome alternative that achieves the rule's objectives, unless there is an explanation why this alternative is not selected or this alternative is inconsistent with law.

Because this proposed rule is estimated to result in the expenditure by State, local, and tribal governments or the private sector of less than $100 million in any one year, the Agency has not prepared a budgetary impact statement or specifically addressed the selection of the least costly, most cost-effective, or least burdensome alternative. Because small governments will not be significantly or uniquely affected by this rule, the Agency is not required to develop a plan with regard to small governments. However, this proposed rule has the net effect of reducing burden from part 82, Stratospheric Protection regulations, on regulated entities.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions. This proposed rule would not have a significant impact on a substantial number of small entities because costs of the SNAP requirements as a whole are expected to be minor. In fact, this proposed rule offers regulatory relief to small businesses by providing acceptable alternatives to phased-out ozone-depleting substances. Additionally, the SNAP rule exempts small sectors and end-uses from reporting requirements and formal agency review. To the extent that information gathering is more expensive and time-consuming for small companies, the actions proposed herein may well provide benefits for small businesses anxious to examine potential substitutes to any ozone-depleting class I and class II substances they may be using, by requiring manufacturers to make information on such substitutes available. Therefore, I certify that this action will not have a significant economic impact on a substantial number of small entities.

D. Paperwork Reduction Act

EPA has determined that this proposed rule contains no information requirements subject to the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., that are not already approved by the Office of Management and Budget (OMB). OMB has reviewed and approved two Information Collection Requests by EPA which are described in the March 18, 1994 rulemaking (59 FR 13044, at 13121, 13146–13147) and in the October 16, 1996 rulemaking (61 FR 54030, at 54038–54039). The OMB Control Numbers are 2060–0226 and 2060–0350.

V. Additional Information

For copies of the comprehensive SNAP lists or additional information on SNAP, contact the Stratospheric Protection Hotline at 1–800–296–1996,

Monday–Friday, between the hours of 10 a.m. and 4 p.m. (EST).

For more information on the Agency's process for administering the SNAP program or criteria for evaluation of substitutes, refer to the SNAP final rulemaking published in the **Federal Register** on March 18, 1994 (59 FR 13044). **Federal Register** notices can be ordered from the Government Printing Office Order Desk (202) 783–3238; the citation is the date of publication. Notices and rulemaking under the SNAP program can also be retrieved electronically from EPA's Technology Transfer Network (TTN), Clean Air Act Amendment Bulletin Board. The access number for users with a 1200 or 2400 bps modem is (919) 541–5742. For users with a 9600 bps modem the access number is (919) 541–1447. For assistance in accessing this service, call (919) 541–5384 during normal business hours (EST). Finally, all EPA publications on protection of stratospheric ozone are available from the Ozone World Wide Web site at http://www.epa.gov/docs/ozone/index.html.

List of Subjects in 40 CFR Part 82

Environmental protection, Administrative practice and procedure, Air pollution control, Reporting and recordkeeping requirements.

Dated: May 14, 1997.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, 40 CFR part 82 is proposed to be amended as follows:

PART 82—PROTECTION OF STRATOSPHERIC OZONE

1. The authority citation for part 82 continues to read as follows:

Authority: 42 U.S.C. 7414, 7601, 7671–7671q.

2. Subpart G is amended by adding the following appendix E to read as follows:

Subpart G—Significant New Alternatives Policy Program

* * * * *

Appendix E to Subpart G—Substitutes Subject to Use Restrictions and Unacceptable Substitutes Listed in the [FR publication date] final rule, effective [30 days after FR publication date].

Refrigeration and Air Conditioning

• 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. Specifications for the fittings similar to those found in SAE J639 and samples of all fittings must be submitted to EPA at the same time as the initial SNAP submission, or the submission will be considered incomplete. These fittings must be designed to mechanically prevent cross-charging with another refrigerant.

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, will be a violation of this use condition. Using an adapter or deliberately modifying a fitting to use a different refrigerant will be a violation of this use condition.

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

—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.

—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 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.

• A label must be used as follows:

—The person conducting the retrofit or installing the system 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 refrigerant 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''

* if the refrigerant displays flammability limits as measured according to ASTM E681 at normal atmospheric pressure and 25 degrees Celsius, 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 about the previous refrigerant that cannot be covered by the new label must be rendered permanently unreadable.

• 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.

REFRIGERATION AND AIR CONDITIONING PROPOSED UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
All CFC–12 end uses, retrofit and new.	NARM–12	Proposed Unacceptable	This blend contains HFC–23, which has an extremely high GWP and lifetime. Other substitutes for CFC–12 exist that do not contain HFC–23.

REFRIGERATION AND AIR CONDITIONING PROPOSED UNACCEPTABLE SUBSTITUTES—Continued

End use	Substitute	Decision	Comments
All R–502 end uses, retrofit and new.	NARM–502	Proposed Unacceptable	This blend contains HFC–23, which has an extremely high GWP and lifetime. Other substitutes for R–502 exist that do not contain HFC–23.
All HCFC–22 end uses, retrofit and new.	NARM–22	Proposed Unacceptable	This blend contains HCFC–22, and it is inappropriate to use such a blend as a substitute for HCFC–22. In addition, this blend contains HFC–23, which has an extremely high GWP and lifetime. Other substitutes for HCFC–22 exist that do not contain HFC–23.

SOLVENTS CLEANING PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS

End use	Substitute	Decision	Conditions
Metals cleaning w/CFC–113	HFC–4310mee	Proposed Acceptable	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.
Metals cleaning w/MCF	HFC–4310mee	Proposed Acceptable	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.

SOLVENTS CLEANING PROPOSED UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
Metals cleaning with CFC–113	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Metals cleaning with methyl chloroform (MCF).	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Metals cleaning with HCFC–141b	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Electronics cleaning with CFC–113.	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Electronics cleaning with MCF	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Electronics cleaning with HCFC–141b.	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Precision cleaning with CFC–113	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Precision cleaning with MCF	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Precision cleaning with HCFC–141b.	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.

FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS PROPOSED ACCEPTABLE SUBJECT TO NARROWED USE LIMITS

End use	Substitute	Decision	Conditions	Comments
Halon 1211	HFC–227ea	Proposed Acceptable in non-residential uses only.		See comments 1, 2.
Streaming Agents	HFC–236fa	Proposed Acceptable in non-residential uses when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step.		See comments 1, 2.

FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS PROPOSED ACCEPTABLE SUBJECT TO NARROWED USE LIMITS—Continued

End use	Substitute	Decision	Conditions	Comments
	C6F14	Acceptable for nonresidential uses where other alternatives are not technically feasible due to performance or safety requirements:. a. due to the physical or chemical properties of the agent, or b. where human exposure to the extinguishing agent may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.	.....	Users must observe the limitations on PFC acceptability by taking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use; and (iii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the March 18, 1994 Final Rulemaking (59 FR 13044). See additional comments 1, 2.

Additional Comments:
1—Discharge testing and training should be strictly limited only to that which is essential to meet safety or performance requirements.
2—The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

TOTAL FLOODING AGENTS PROPOSED ACCEPTABLE SUBJECT TO NARROWED USE LIMITS

End use	Substitute	Decision	Conditions	Comments
Halon 1301 ..... Total Flooding Agents.	HFC–236fa	Proposed Acceptable ..... o when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step.. o for use in explosion suppression and explosion inertion applications, and. o for use in fire suppression applications where other non-PFC agents or alternatives are not technically feasible due to performance or safety requirements:. a. due to their physical or chemical properties, or. b. where human exposure to the extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions..	Until OSHA establishes applicable workplace requirements:. For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 10%.. For occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL of 15%.. All personnel must be evacuated before concentration of HFC–236fa exceeds 15%.. Design concentration must result in oxygen levels of at least 16%..	The comparative design concentration based on cup burner values is approximately 6.4%. Users must observe the limitations on HFC–236fa acceptability by taking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. Feasible for use in a normally occupied area. See additional comments 1, 2, 3, 4.

TOTAL FLOODING AGENTS PROPOSED ACCEPTABLE SUBJECT TO NARROWED USE LIMITS—Continued

End use	Substitute	Decision	Conditions	Comments
	C4F10	Proposed Acceptable where other alternatives are not technically feasible due to performance or safety requirements:. a. due to their physical or chemical properties, or. b. where human exposure to the extinguishing agents may result in failure to meet use conditions or in other unacceptable health effects under normal operating conditions..	Until OSHA establishes applicable workplace requirements:. For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 30%.. Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL.. All personnel must be evacuated before concentration of C4F10 exceeds 40%.. Design concentration must result in oxygen levels of at least 16%..	The comparative design concentration based on cup burner values is approximately 8.8%. Users must observe the limitations on PFC acceptability by taking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the March 18, 1994 Final Rulemaking (59 FR 13044.) See additional comments 1, 2, 3, 4.
Halon 1301 ..... Total Flooding Agents.	C3F8	Proposed Acceptable where other alternatives are not technically feasible due to performance or safety requirements:. a. due to their physical or chemical properties, or. b. where human exposure to the extinguishing agents may result in failure to meet use conditions or in other unacceptable health effects under normal operating conditions..	Until OSHA establishes applicable workplace requirements:. For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 30%.. Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL.. All personnel must be evacuated before concentration of C3F8 exceeds 30%.. Design concentration must result in oxygen levels of at least 16%..	The comparative design concentration based on cup burner values is approximately 8.8%. Users must observe the limitations on PFC acceptability by taking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the March 18, 1994 Final Rulemaking (59 FR 13044.) See additional comments 1, 2, 3, 4.

Additional Comments

1—Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.

2—Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.

3—Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.

4—The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

TOTAL FLOODING AGENTS PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS

End use	Substitute	Decision	Conditions	Comments
Halon 1301 ..... Total Flooding Agents.	HFC–236fa	Proposed Acceptable ..... when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC–236fa in a single step for use in explosion suppression and explosion inertion applications, and for use in fire suppression applications where other non-PFC agents or alternatives are not technically feasible due to performance or safety requirements: a. due to their physical or chemical properties, or b. where human exposure to the extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions.	Until OSHA establishes applicable workplace requirements: For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 10%. For occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL of 15%. All personnel must be evacuated before concentration of HFC–236fa exceeds 15%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concentration based on cup burner values is approximately 6.4%. Users must observe the limitations on HFC–236fa acceptability by taking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. Feasible for use in a normally occupied area. See additional comments 1, 2, 3, 4.
Halon 1301 ..... Total Flooding Agents.	C3F8	Proposed Acceptable where other alternatives are not technically feasible due to performance or safety requirements: a. due to their physical or chemical properties, or b. where human exposure to the extinguishing agents may result in failure to meet use conditions or in other unacceptable health effects under normal operating conditions.	Until OSHA establishes applicable workplace requirements: For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 30% Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL. All personnel must be evacuated before concentration of C3F8 exceeds 30%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concentration based on cup burner values is approximately 8.8%. Users must observe the limitations on PFC acceptability by undertaking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the March 18, 1994 Final RUlemaking (59 FR 13044.) See additional comments 1, 2, 3, 4.

TOTAL FLOODING AGENTS PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS—Continued

End use	Substitute	Decision	Conditions	Comments
	C4F10	Proposed Acceptable where other alternatives are not technically feasible due to performance or safety requirements: a. due to their physical or chemical properties, or b. where human exposure to the extinguishing agents may result in failure to meet use conditions or in other unacceptable health effects under normal operating conditions	Until OSHA establishes applicable workplace requirements: For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 30%. Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL. All personnel must be evacuated before Design concentration of C4F10 exceeds 40%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concentration based on cup burner values is approximately 8.8%. Users must observe the limitations on PFC acceptability by undertaking the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that human exposure to the other alternative extinguishing agents may result in failure to meet applicable use conditions or in other unacceptable health effects under normal operating conditions; and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the March 18, 1994 Final Rulemaking (59 FR 13044.) See additional comments 1, 2, 3, 4.

Additional Comments
1—Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2—Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3—Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4—The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

FIRE SUPPRESSION AND EXPLOSION PROTECTION PROPOSED UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
Halon 1301 Total Flooding Agents	Chlorobromomethane	Proposed Unacceptable	High ODP; other alternatives exist.

AEROSOLS PROPOSED ACCEPTABLE SUBJECT TO USE CONDITIONS

End use	Substitute	Decision	Conditions
Solvent in aerosols w/ CFC–113	HFC–4310 mee	Proposed Acceptable	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.
Solvent in aerosols w/ MCF	HFC–4310 mee	Proposed Acceptable	Subject to a 200 ppm time-weighted average workplace exposure standard and a 400 ppm workplace exposure ceiling.
Solvent in aerosols w/ CFC–113	HCFC–225ca/cb	Proposed Acceptable	Subject to a time weighted average exposure limit of 25 ppm for the HCFC–225 ca isomer.
Solvent in aerosols w/ MCF	HCFC–225ca/cb	Proposed Acceptable	Subject to a time weighted average exposure limit of 25 ppm for the HCFC–225 ca isomer.

AEROSOLS PROPOSED UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
Solvent in aerosols with CFC–113	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.

AEROSOLS PROPOSED UNACCEPTABLE SUBSTITUTES—Continued

End use	Substitute	Decision	Comments
Solvent in aerosols with MCF	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.

ADHESIVES, COATINGS, AND INKS PROPOSED UNACCEPTABLE SUBSTITUTES

End use	Substitute	Decision	Comments
Solvent in adhesive, coatings, and inks with CFC–113.	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.
Solvent in adhesives, coatings, and inks with MCF.	Chlorobromomethane	Proposed Unacceptable	High ODP, toxicity concerns; other alternatives exist.

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