

Dated: February 1, 1996.

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Director, Office of New Animal Drug
Evaluation, Center for Veterinary Medicine.
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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 82

[FRL-5418-3]

Protection of Stratospheric Ozone

AGENCY: Environmental Protection Agency.

ACTION: Notice of acceptability and clarification of June 13, 1995 final rule.

SUMMARY: This notice expands the list of acceptable substitutes for ozone-depleting substances (ODS) 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 OZONE-DEPLETING SUBSTANCES (ODS), and regulate the use of substitutes where other alternatives exist that 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. In addition, this Notice clarifies several points from the June 13, 1995 final rule (60 FR 31092).

On March 18, 1994, EPA promulgated its plan for administering the SNAP program, and issued decisions on the acceptability and unacceptability of a number of substitutes (59 FR 13044). In today's Notice, EPA issues decisions on the acceptability of substitutes not previously reviewed by the Agency. The intended effect of this action is to expedite movement away from ozone depleting compounds. To arrive at determinations on the acceptability of substitutes, the Agency completed a cross-media sector end-use screening assessment of risks to human health and the environment.

EFFECTIVE DATE: February 8, 1996.

ADDRESSES: Information relevant to this notice is contained in Air Docket A-91-42, Central Docket Section, South Conference Room 4, U.S. Environmental Agency, 401 M Street SW., Washington, DC 20460. Telephone: (202) 260-7548. The docket may be inspected between 8 a.m. and 5:30 p.m. weekdays. As provided in 40 CFR part 2, a reasonable fee may be charged for photocopying.

FOR FURTHER INFORMATION CONTACT:

Jeffrey Levy at (202) 233-9727 or fax (202) 233-9577, U.S. EPA, Stratospheric Protection Division, 401 M Street, SW., Mail Code 6205J, Washington, DC 20460; EPA Stratospheric Ozone Protection Hotline at (800) 296-1996; EPA World Wide Web Site at <http://www.epa.gov/docs/ozone/title6/SNAP/snap.html>.

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I. 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 substance to or delete a substance 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 6 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 compose the principal industrial sectors that historically consumed the largest volumes of ozone-depleting compounds.

As described in the final rule for the SNAP program (59 FR 13044), 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 substance. Consequently, EPA is adding substances to the list of acceptable alternatives without first requesting comment on new listings.

EPA does, however, believe that notice-and-comment rulemaking is required to place any substance on the list of prohibited substitutes, to list a substance as acceptable only under certain conditions, to list substances as acceptable only for certain uses, or to remove a substance from either the list of prohibited or acceptable substitutes. Updates to these lists are published as separate notices of rulemaking in the Federal Register.

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 substitute manufacturers, but may include importers, formulators or end-users, when they are responsible for introducing a substitute into commerce.

EPA published Notices listing acceptable alternatives on August 26, 1994 (59 FR 44240), January 13, 1995 (60 FR 3318), and July 28, 1995 (60 FR 38729), and published a Final Rulemaking restricting the use of certain substitutes on June 13, 1995 (60 FR 31092). EPA also published a Notice of Proposed Rulemaking restricting the use of certain substitutes on October 2, 1995 (60 FR 51383).

II. Listing of Acceptable Substitutes

This section presents EPA's most recent acceptable listing decisions for substitutes for class I and class II substances in the following industrial sectors: refrigeration and air conditioning, foam blowing, and fire suppression and explosion protection. In this Notice, EPA has split the refrigeration and air conditioning sector into two parts: Substitutes for class I substances and substitutes for class II substances. These decisions represent substitutes not previously reviewed and add to the lists of acceptable substitutes under SNAP. For copies of the full list, contact the EPA Stratospheric Protection Hotline at (800) 296-1996.

Parts A through D below present a detailed discussion of the substitute listing determinations by major use sector. Tables summarizing today's listing decisions are in Appendix A. The comments contained in Appendix A provide additional information on a substitute, but like the listings of acceptable substitutes, they are not legally binding. Thus, adherence to recommendations in the comments are not mandatory for use of a substitute. In addition, the comments should not 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 to their use 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

Please refer to the final SNAP rule for detailed information pertaining to the designation of end-uses, additional requirements imposed under sections 608 and 609, and other information related to the use of alternative refrigerant.

1. Clarifications From the June 13, 1995 Final Rule

HCFC Blend Beta was listed as containing HFC-134a, HCFC-124, and isobutane. In fact, according to the submission on file with EPA, this blend contains butane. The determination that this blend is acceptable subject to certain use conditions applied to the actual blend, not to the incorrectly listed one.

In the tables listing unacceptable substitutes for CFC-12 in motor vehicle air conditioning, a definition for the category "Flammable Substitutes" was inadvertently omitted. As discussed in the preamble, it should have included the phrase "as having flammability limits as measured according to ASTM E-681 with modifications included in Society of Automotive Engineers Recommended Practice J1657, including blends which become flammable during fractionation." In addition, EPA clearly does not intend to constrain future findings. Thus, the table should have included a statement that this category does not include substitutes discussed explicitly in other rulings.

2. Other Clarification

EPA has received inquiries as to the point at which a blend is sufficiently different from an already reviewed substitute as to require a new submission. EPA generally follows similar guidelines used by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). When new blends are submitted to ASHRAE for classification, the manufacturer must specify blending tolerances. Any blend that falls outside those tolerances is defined to be a distinct refrigerant. EPA requires leak testing of blends to determine whether they can become flammable after fractionation. The percentage of flammable components in a blend are usually quite close to the maximum possible for the blend as a whole to remain nonflammable. Even an increase of 1% of a flammable component may change the flammability of the blend. Therefore, blending tolerances are smaller for flammable components than for nonflammable components.

Companies should determine blending tolerances. If the outside range of those tolerances could result in a different flammability or toxicity profile, then the blend will require a new submission. EPA encourages manufacturers to contact the SNAP refrigerants analyst for assistance in making this determination.

3. Acceptable Substitutes

a. R-508. *R-508, which contains HFC-23 and R-116, is acceptable as a substitute for CFC-13, R-13B1, and R-503 in retrofitted and new very low temperature refrigeration.* Both components of this blend exhibit extremely high GWPS and long lifetimes. HFC-23 has a GWP of 9,000 and a lifetime of 280 years, and R-116, perfluoroethane, has a GWP of 9,000 and a lifetime of 10,000 years. EPA believes this blend could significantly contribute to global warming if allowed to escape refrigeration systems. In addition, the long lifetimes of R-116 and HFC-23 mean any global warming or other effects would be essentially irreversible. Note that the prohibition on venting, which applies to all substitute refrigerants, was mandated in section 608(c)(2) and took effect on November 15, 1995. While the current rule issued under section 608 of the CAA (58 FR 28660) does not specify recycling or leak repair requirements, it is illegal to vent this refrigerant at any time. In addition, EPA anticipates proposing new recycling regulations for non-ozone-depleting refrigerants in the near future. A fact sheet on the proposal is available from the EPA Ozone Hotline at (800) 296-1996. This blend is nonflammable and does not deplete ozone. EPA urges manufacturers to develop alternatives for R-503 and CFC-13 that do not contain substances with such high GWPS and long lifetimes.

b. R-411A and R-411B. *R-411A and R-411B, which consist of HCFC-22, HFC-152a, and propylene, are acceptable as substitutes for CFC-12 and R-502 in the following end-uses:*

- Reciprocating Chillers
- Industrial Process Refrigeration
- Cold Storage Warehouses
- Refrigerated Transport
- Retail Food Refrigeration
- Commercial Ice Machines
- Vending Machines
- Water Coolers

HCFC-22 contributes to ozone depletion, but to a much lesser degree than CFC-12. Regulations regarding recycling and reclamation issued under section 608 of the Clean Air Act apply to this blend (58 FR 28660). This blend

poses less of a threat to the ozone layer than HCFC-22, which has already been listed as an acceptable substitute for CFC-12. The GWP of HCFC-22 is somewhat high, but the GWP of HFC-152a is low. Although propylene and HFC-152a are flammable, R-411A and R-411B have been designated as A1/A2 refrigerants by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). This designation means that the blend as formulated is nonflammable, but can become flammable under worst-case fractionation. However, over 75% of R-411A and 95% of R-411B must leak from the vapor phase before becoming flammable. Leaks from the liquid phase do not become flammable, regardless of the amount leaked.

c. HCFC Blend Beta. *HCFC Blend Beta, which consists of HCFC-124, HFC-134a, and butane, is acceptable as a substitute for CFC-12 in the following new and retrofitted end-uses:*

- Reciprocating Chillers
- Industrial Process Refrigeration
- Cold Storage Warehouses
- Refrigerated Transport
- Retail Food Refrigeration
- Vending Machines
- Water Coolers
- Commercial Ice Machines
- Household Refrigerators
- Household Freezers
- Residential Dehumidifiers

This blend contains HCFC-124. Therefore, it contributes to ozone depletion, but to a much lesser degree than CFC-12. HCFC-124 has an ODP much lower than that of HCFC-22, which has already been listed as an acceptable substitute for CFC-12. Regulations regarding recycling and reclamation issued under section 60 of the Clean Air Act (58 FR 28660) apply to this blend. The GWPS of the components are moderate to low. This blend is nonflammable, and leak testing has demonstrated that the blend never becomes flammable.

d. HCFC Blend Delta. *HCFC Blend Delta is acceptable as a substitute for CFC-12 in retrofitted household refrigerators and freezers.* The composition of this blend has been claimed confidential by the manufacturer. This blend contains at least one HCFC, and therefore contributes to ozone depletion, but to a much lesser degree than CFC-12. Regulations regarding recycling and reclamation issued under section 608 of the Clean Air Act apply to this blend (58 FR 28660). The GWPS of the components are moderate to low. This blend is nonflammable, and leak testing

has demonstrated that the blend never becomes flammable.

e. HCFC Blend Lambda. *HCFC Blend Lambda, which consists of HCFC-22, HCFC-142b, and isobutane, is acceptable as a substitute for R-500 in retrofitted centrifugal chillers and as a substitute for CFC-12 in the following new and retrofitted end-uses:*

- Reciprocating Chillers
- Industrial Process Refrigeration
- Cold Storage Warehouses
- Refrigerated Transport
- Retail Food Refrigeration
- Vending Machines
- Water Coolers
- Commercial Ice Machines
- Household Refrigerators
- Household Freezers
- Residential Dehumidifiers

HCFC-22 and HCFC-142b contribute to ozone depletion, but to a much lesser degree than CFC-12. Regulations regarding recycling and reclamation issued under section 608 of the Clean Air Act apply to this blend (58 FR 28660). HCFC-142b has an ODP slightly higher than that of HCFC-22. The GWPS of HCFC-22 and HCFC-142b are somewhat high. Although HCFC-142b is flammable, the blend is not. Under massive leakage, this blend becomes weakly flammable. However, this blend contains more HCFC-22 and less of the two flammable components than R-406A, and therefore should be at least as safe to use as R-406A. However, users should note that operating pressures will be higher than when using R-406A, so its use may not be appropriate in the same types of equipment.

f. HFC-236fa. *HFC-236fa, when manufactured using any process that does not convert perfluoroisobutylene (PFIB) directly to HFC-236fa in a single step, is acceptable as a substitute for CFC-114 in centrifugal chillers.* HFC-236fa does not harm the ozone layer because it does not contain chlorine. HFC-236fa has an extremely high 100-year GWP of 8000, but its lifetime is considerably shorter than that of perfluorocarbons. Although HCFC-124 is already listed as acceptable in this end-use, it produces toxic byproducts when it passes through air purification systems on submarines. Therefore, HCFC-124 is not a feasible alternative. HFC-236fa is the only alternative identified to date that is safe for the ozone layer, is low in toxicity, and can withstand the air purification process. Note that the prohibition on venting, which applies to all substitute refrigerants, was mandated in section 608(c)(2) and took effect on November 15, 1995. While the current rule issued under section 608 of the CAA (58 FR

28660) does not specify recycling or leak repair requirements, it is illegal to vent this refrigerant at any time. In addition, EPA anticipates proposing new recycling regulations for non-ozone-depleting refrigerants in the near future. A fact sheet on the proposal is available from the EPA Ozone Hotline at (800) 296-1996.

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. However, 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. To date, despite the fact that some alternatives are manufactured by several companies, no process has been identified as significantly more hazardous than another. Therefore, EPA has not yet based SNAP decisions specifically on the manufacturing process.

EPA is aware, however, 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.

A. Refrigeration and Air Conditioning: Substitutes for Class II Substances

Please refer to the March 18, 1994 SNAP rule (59 FR 13044) for detailed information pertaining to the designation of end-uses, additional requirements imposed under sections 608 and 609, and other information related to the use of alternative refrigerants.

This Notice marks the first time EPA has addressed substitutes for HCFC-22 in the refrigeration and air conditioning sector. Although the substitutes listed below were intended specifically to replace HCFC-22, HCFC-22 is itself frequently used as a substitute for class I refrigerants (e.g., CFC-11 and CFC-12).

Therefore, the listings below also describe these HCFC-22 substitutes as acceptable alternatives for class I refrigerants in new equipment. The underlying reasoning is that if, for instance, HCFC-22 poses lower overall risk than CFC-12, and R-410A poses lower overall risk than HCFC-22, then R-410A must also pose lower overall risk than CFC-12. Therefore, even though R-410A isn't designed to be a direct replacement for CFC-12, in new equipment it may be appropriate to design for R-410A rather than for another CFC-12 substitute. As with all listings, however, engineering decisions are required to determine the best match between a given class I refrigerant and an alternative.

1. Acceptable

a. R-410A and R-410B. *R-410A and R-410B, which consist of HFC-32 and HFC-125, are acceptable as substitutes for HCFC-22, and by extension, class I refrigerants, in equipment in the following new end-uses:*

- Centrifugal, Reciprocating, and Screw Chillers
- Industrial Process Refrigeration Systems
- Very-Low-Temperature Industrial Process Refrigeration
- Industrial Process Air Conditioning
- Ice Skating Rinks
- Refrigerated Transport
- Retail Food Refrigeration
- Cold Storage Warehouses
- Vending Machines
- Water Coolers
- Commercial Ice Machines
- Household Refrigerators and Freezers
- Residential Dehumidifiers
- Household and Light Commercial Air Conditioning

Both R-410A and R-410B contain HFC-32 and HFC-125 but in slightly different compositions. Neither blend is flammable when used in these end uses while maintaining as-formulated composition nor after leak conditions. Leak testing has demonstrated that their compositions do not become flammable under any of the conditions found in these end uses. However, since both blends include HFC-32, which is flammable by itself, they should not be mixed with high concentrations of air above atmospheric pressures to minimize the risk of ignition. HFC-125 exhibits a fairly high global warming potential (3,200 at 100 year integrated time horizon) compared to other HFCs and HCFC-22. However, its potential for contributing to global warming will be delayed in the listed end uses through the implementation of the venting prohibition under Section 608(c)(2) of

the Clean Air Act Amendments. Note that the prohibition on venting, which applies to all substitute refrigerants, was mandated in section 608(c)(2) and took effect on November 15, 1995. While the current rule issued under section 608 of the CAA (58 FR 28660) does not specify recycling or leak repair requirements, it is illegal to vent this refrigerant at any time. In addition, EPA anticipates proposing new recycling regulations for non-ozone-depleting refrigerants in the near future. A fact sheet on the proposal is available from the EPA Ozone Hotline at (800) 296-1996. R-410A and R-410B do not contain ozone-depleting substances, they are low in toxicity, and none of their components is regulated as a volatile organic compound.

b. R-407C. *R-407C, which is a blend of HFC-32, HFC-134a and HFC-125, is acceptable as a substitute for HCFC-22 in new and retrofit equipment, and by extension, as a substitute for class I refrigerants in new equipment, in the following end-uses:*

- Centrifugal, Reciprocating, and Screw Chillers
- Industrial Process Refrigeration
- Very Low Temperature Industrial Process Refrigeration
- Ice Skating Rinks
- Refrigerated Transport
- Retail Food Refrigeration Systems
- Cold Storage Warehouses
- Vending Machines
- Water Coolers
- Commercial Ice Machines
- Household Refrigerators and Freezers
- Residential Dehumidifiers
- Household and Light Commercial Air Conditioning

This blend is not flammable when used in these end uses while maintaining as-formulated composition or after leak conditions. Leak testing has demonstrated that its composition, or composition variations due to fractionation, does not make it flammable under any of the conditions found in these end uses. This blend includes HFC-32 and HFC-125, therefore the above discussion of these two substances as part of R-410A and R-410B is applicable. Again, EPA urges users to reduce leakage and recover and recycle this blend during equipment servicing and upon the retirement of equipment. R-407C doesn't damage the ozone layer, it is low in toxicity, and none of its components is regulated as a volatile organic compound. Note that the prohibition on venting, which applies to all substitute refrigerants, was mandated in section 608(c)(2) and took effect on November 15, 1995. While the current rule issued under section 608 of the CAA (58 FR 28660) does not specify

recycling or leak repair requirements, it is illegal to vent this refrigerant at any time. In addition, EPA anticipates proposing new recycling regulations for non-ozone-depleting refrigerants in the near future. A fact sheet on the proposal is available from the EPA Ozone Hotline at (800) 296-1996.

c. HFC-134a. *HFC-134a is acceptable as a substitute for HCFC-22 in new Household and Light Commercial Air Conditioning.* HFC-134a exhibits a moderate to high global warming potential (1,300 at 100 year integrated time horizon) compared to other HFCs. Although much lower than HFC-125, uncontrolled emissions could have a significant impact on global warming. Therefore, the above guidance on controlling leaks and recycling, particularly during disposal, are applicable to HFC-134A in this end use. HFC-134a does not damage the ozone layer, it is very low in toxicity, and it is not regulated as a volatile organic compound. Note that the prohibition on venting, which applies to all substitute refrigerants, was mandated in section 608(c)(2) and took effect on November 15, 1995. While the current rule issued under section 608 of the CAA (58 FR 28660) does not specify recycling or leak repair requirements, it is illegal to vent this refrigerant at any time. In addition, EPA anticipates proposing new recycling regulations for non-ozone-depleting refrigerants in the near future. A fact sheet on the proposal is available from the EPA Ozone Hotline.

B. Fire Suppression and Explosion Protection

1. Acceptable

a. Total Flooding Agents. (1) *[Powdered Aerosol] C is acceptable for use in normally unoccupied areas.* This agent is intended solely for use in normally unoccupied areas and thus it does not represent a significant threat to worker safety or health. Use conditions to limit the risk of inadvertent exposure to personnel in normally unoccupied areas may be included in future rulemakings.

III. Substitutes Pending Review

The Agency describes submissions as pending if data are incomplete or for which the 90-day review period is underway and EPA has not yet reached a final decision. For submissions that are incomplete, the Agency will contact the submitter to determine a schedule for providing the missing information if the Agency needs to extend the 90-day review period. EPA will use its authority under section 114 of the Clean Air Act to gather this information, if

necessary. Any delay of the review period does not affect a manufacturer's ability to sell a product 90 days after notification of the Agency. Substitutes currently pending completion of review are listed in Appendix A.

IV. Additional Information

Contact the Stratospheric Protection Hotline at 1-800-296-1996, Monday-Friday, between the hours of 10:00 a.m. and 4:00 p.m. (Eastern Standard Time) weekdays.

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. This Notice can also be retrieved electronically from EPA's Technology Transfer Network (TTN), Clean Air Act Amendment Bulletin Board. If you have a 1200 or 2400 bps modem, dial (919) 541-5742. If you have a 9600 bps modem, dial (919) 541-1447. For assistance in accessing this service, call (919) 541-5384. Finally, this notice may

be obtained on the World Wide Web at <http://www.epa.gov/docs/ozone/title6/snap/snap.html>.

List of Subjects in 40 CFR Part 82

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

Dated: December 19, 1995.

Mary D. Nichols,
Assistant Administrator for Air and Radiation.

Note: The following Appendix will not appear in the Code of Federal Regulations.

APPENDIX A: SUMMARY OF ACCEPTABLE AND PENDING DECISIONS

[Refrigerants—Class I Acceptable Substitutes]

End-Use	Substitute	Decision	Comments
CFC-12 and R-500 Reciprocating Chillers; CFC-12 and R-502 Industrial Process Refrigeration, Cold Storage Warehouses, Refrigerated Transport, Retail Food Refrigeration, Vending Machines, Water Coolers, Commercial Ice Machines (Retrofitted and New).	R-411A R-411B HCFC blend Beta HCFC Blend Lambda ...	Acceptable Acceptable Acceptable Acceptable	This blend contains the same components as R-406A, but in different percentages.
CFC-12 and R-502 Household Refrigerators, Household Freezers, and Residential Dehumidifiers.	HCFC Blend Beta HCFC Blend Lambda ...	Acceptable Acceptable	This blend contains the same components as R-406A, but in different percentages.
CFC-13, R-13B1, and R-503 Very Low Temperature Refrigeration.	R-508	Acceptable.	
CFC-114 Centrifugal Chillers	HFC-236fa	Acceptable.	

REFRIGERATION AND AIR CONDITIONING ACCEPTABLE SUBSTITUTES FOR CLASS II SUBSTANCES

End-use	Substitute	Decision	Comments
Household and Light Commercial Air Conditioning	.....	.....	This end use also includes heat pump systems.
HCFC-22 Systems, New	R-407C, R-410A, R-410B, HFC-134A.	Acceptable	EPA urges recycling.
HCFC-22 Systems, Retrofit	R-407C	Acceptable	EPA urges recycling.
Commercial Comfort Air Conditioning	.....	.....	This end use includes chillers in general.
HCFC-22 Reciprocating Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-12 Reciprocating Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-500 Reciprocating Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-11 Centrifugal Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-12 Centrifugal Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Centrifugal Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Centrifugal Chillers, Retrofit	R-407C	Acceptable	EPA urges recycling.
R-500 Centrifugal Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Screw Chillers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Screw Chillers, Retrofit	R-407C	Acceptable	EPA urges recycling.
Industrial Process Refrigeration	.....	.....	It also includes very-low-temperature industrial refrigeration.
HCFC-22 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Systems, Retrofit	R-407C	Acceptable	EPA urges recycling.
CFC-12 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-500 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.

REFRIGERATION AND AIR CONDITIONING ACCEPTABLE SUBSTITUTES FOR CLASS II SUBSTANCES—Continued

End-use	Substitute	Decision	Comments
R-502 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Industrial Process Air Conditioners			
HCFC-22 A/C Systems, New	R-407C, R-410A, R-410B, HFC-134a.	Acceptable	EPA urges recycling.
HCFC-22 A/C Systems, Retrofit	R-407C	Acceptable	EPA urges recycling.
CFC-12 A/C System, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-114 A/C System, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-12/CFC-114 A/C Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Ice Skating Rinks			
HCFC-22 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Systems, Retrofit	R-407C	Acceptable	EPA urges recycling.
CFC-12 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-502 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Refrigerated Transport			
CFC-12 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-500 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-502 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Retail Food Refrigeration	.....	.....	It also includes cold storage warehouses.
HCFC-22 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
HCFC-22 Systems, Retrofit	R-407C	Acceptable	EPA urges recycling.
CFC-12 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-502 Systems, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Ice Machines			
CFC-12 Ice Machines, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Household Refrigerators and Freezers			
CFC-12 Household Refrigerators, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
CFC-12 Household Freezers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-502 Household Freezers, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
Other Refrigerated Appliances	.....	.....	Includes water coolers, vending machines, and dehumidifiers.
CFC-12 Refrigerated Appliances, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.
R-502 Refrigerated Appliances, New	R-407C, R-410A, R-410B.	Acceptable	EPA urges recycling.

FIRE SUPPRESSION AND EXPLOSION PROTECTION

[Total Flooding Agents Acceptable Substitutes]

End-Use	Substitute	Decision	Comments
Halon 1301	Powdered Aerosol C	Acceptable	For use in normally unoccupied areas only.
Acceptable Substitutes—Foam Blowing			
Integral Skin with HCFC-22	CO ₂ HFC-134a	Acceptable. Acceptable.	

PENDING DECISIONS—FOAM BLOWING

End-use	Substitute	Comments
HCFCs, Polyurethane Integral Skin	CO2 HFC-134a.	

PENDING SUBSTITUTES—SOLVENT CLEANING

End-use	Substitute	Comments
Metals Cleaning w/ CFC-113 and MCF.	Chlorobromomethane	Additional toxicity testing is necessary to characterize fully the chronic health effects such as carcinogenicity that could arise from repeated exposures. In addition, decomposition studies and ozone depletion analyses must be completed before SNAP decision is rendered.
Electronics Cleaning w/ CFC-113 and MCF.	Chlorobromomethane	Additional toxicity testing is necessary to characterize fully the chronic health effects such as carcinogenicity that could arise from repeated exposures. In addition, decomposition studies and ozone depletion analyses must be completed before SNAP decision is rendered.
Precision Cleaning w/ CFC-113 and MCF.	Chlorobromomethane	Additional toxicity testing is necessary to characterize fully the chronic health effects such as carcinogenicity that could arise from repeated exposures. In addition, decomposition studies and ozone depletion analyses must be completed before SNAP decision is rendered.

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40 CFR Part 271

[FRL-5308-5]

Michigan: Final Authorization of Revisions to State Hazardous Waste Management Program**AGENCY:** Environmental Protection Agency.**ACTION:** Immediate final rule.

SUMMARY: Michigan has applied for final authorization of revisions to its hazardous waste program under the Resource Conservation and Recovery Act of 1976 as amended (hereinafter "RCRA"). The Environmental Protection Agency (EPA) has reviewed Michigan's application and has reached a decision, subject to public review and comment, that Michigan's hazardous waste program revisions satisfy all the requirements necessary to qualify for final authorization. Thus, EPA intends to approve Michigan's hazardous waste program revisions, subject to authority retained by EPA under the Hazardous and Solid Waste Amendments of 1984 (hereinafter HSWA). Michigan's application for program revision is available for public review and comment.

EFFECTIVE DATE: Final authorization for Michigan's program revisions shall be effective April 8, 1996 unless EPA publishes a prior Federal Register (FR) action withdrawing this immediate final rule. All comments on Michigan's program revision application must be received by the close of business on

March 9, 1996. If an adverse comment is received, EPA will publish either: (1) A withdrawal of the immediate final decision; or (2) a notice containing a response to comments which either affirms that the immediate final decision takes effect or reverses the decision.

ADDRESSES: Written comments should be sent to Ms. Judy Feigler, Michigan Regulatory Specialist, U.S. EPA, Office of RCRA, DR-7J, 77 West Jackson Boulevard, Chicago, Illinois 60604, phone (312) 886-4179. Copies of Michigan's program revision application are available for inspection and copying at the following addresses from 9 a.m. to 4 p.m.: Michigan Department of Environmental Quality, 608 W. Allegan, Hannah Building, Lansing, Michigan. Contact: Ms. Ronda Blayer, Phone: (517) 373-9548; U.S. EPA, Region V, 77 West Jackson Boulevard, Chicago, Illinois 60604, contact: Ms. Judy Feigler, (312) 886-4179.

FOR FURTHER INFORMATION CONTACT: Ms. Judy Feigler, Michigan Regulatory Specialist, U.S. Environmental Protection Agency, Region V, Office of RCRA, DR-7J, 77 West Jackson Boulevard, Chicago, Illinois 60604, Phone: (312) 886-4179.

SUPPLEMENTARY INFORMATION:**A. Background**

States with final authorization under section 3006(b) of RCRA, 42 U.S.C. 6926(b), have a continuing obligation to maintain a hazardous waste program that is equivalent to, consistent with, and no less stringent than the Federal hazardous waste program.

In accordance with 40 CFR 271.21(a), revisions to State hazardous waste

programs are necessary when Federal or State statutory or regulatory authority is modified or when certain other changes occur. Most commonly, State program revisions are necessary because of changes to EPA's regulations in 40 CFR parts 124, 260-268 and 270.

B. Michigan

Michigan initially received final authorization for its base RCRA program effective on October 30, 1986 (51 FR 36804-36805, October 16, 1986). Michigan received authorization for revisions to its program effective on January 23, 1990 (54 FR 225, November 24, 1989), June 24, 1991 (56 FR 18517, April 23, 1991), November 30, 1993 (58 FR 51244, October 1, 1993), and January 13, 1995 (60 FR 3095, January 13, 1995). On June 18, 1994, Michigan revised its hazardous waste rules. On March 30, 1995, Michigan recodified its hazardous waste statute, Act 64, in Part 111 of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (Act 451). On November 9, 1995, Michigan completed a revision application seeking authorization for the program revisions. EPA has reviewed this application and has made an immediate final decision that Michigan's hazardous waste program revision satisfies all the requirements necessary to qualify for final authorization. Consequently, EPA intends to grant final authorization to Michigan for its additional program revisions. The public may submit written comments on EPA's immediate final decision up until March 9, 1996. Copies of Michigan's application for program revision are available for inspection and copying at the locations