

(1) If the inspection was done on or after the effective date of this AD: Submit the report within 30 days after the inspection.

(2) If the inspection was done before the effective date of this AD: Submit the report within 30 days after the effective date of this AD.

#### Alternative Methods of Compliance (AMOCs)

(k)(1) The Manager, Seattle Aircraft Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to *ATTN: Wayne Lockett, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6447; fax (425) 917-6590. Or, e-mail information to 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.*

(2) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD, if it is approved by an Authorized Representative for the Boeing Commercial Airplanes Delegation Option Authorization Organization who has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

Issued in Renton, Washington, on October 5, 2009.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

[FR Doc. E9-24986 Filed 10-16-09; 8:45 am]

BILLING CODE 4910-13-P

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 82

[EPA-HQ-OAR-2008-0664; FRL-8969-7]

RIN 2060-AP11

#### Protection of Stratospheric Ozone: New Substitute in the Motor Vehicle Air Conditioning Sector Under the Significant New Alternatives Policy (SNAP) Program

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Clean Air Act requires the Environmental Protection Agency

(EPA) to review alternatives for ozone-depleting substances and to approve of substitutes that do not present a risk more significant than other alternatives that are available. Under that authority, the Significant New Alternatives Policy (SNAP) program of EPA proposes to expand the list of acceptable substitutes for ozone-depleting substances (ODS). The substitute addressed in this proposal is for the motor vehicle air conditioning (MVAC) end-use within the refrigeration and air-conditioning sector. EPA proposes to find HFO-1234yf acceptable, subject to use conditions as a substitute for CFC-12 in motor vehicle air conditioning. The proposed substitute is a non ozone-depleting gas and consequently does not contribute to stratospheric ozone depletion.

**DATES:** Comments must be received on or before December 18, 2009, unless a public hearing is requested. Comments must then be received on or before January 4, 2010. Any party requesting a public hearing must notify the contact listed below under **FOR FURTHER INFORMATION CONTACT** by 5 p.m. Eastern Daylight Time on October 29, 2009. If a hearing is held, it will take place on November 3, 2009.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2008-0664, by one of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the on-line instructions for submitting comments.
- *E-mail:* [a-and-r-Docket@epa.gov](mailto:a-and-r-Docket@epa.gov).
- *Fax:* (202) 566-1741.
- *Mail:* Environmental Protection Agency, EPA Docket Center (EPA/DC), Mailcode 6102T, Attention Docket ID No. EPA-HQ-OAR-2008-0664, 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
- *Hand Delivery:* Public Reading Room, Room 3334, EPA West Building, 1301 Constitution Avenue, NW., Washington, DC.

Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

**Instructions:** Direct your comments to Docket ID No. EPA-HQ-OAR-2008-0664. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at <http://www.regulations.gov>, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute.

Do not submit information that you consider to be CBI or otherwise protected through <http://www.regulations.gov> or e-mail. The <http://www.regulations.gov> Web site is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through <http://www.regulations.gov> your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

**Docket:** All documents in the docket are listed in the <http://www.regulations.gov> index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in <http://www.regulations.gov> or in hard copy at the Air Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC. This Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air Docket is (202) 566-1742.

**FOR FURTHER INFORMATION CONTACT:** For further information about this proposed rule, contact Margaret Sheppard, Stratospheric Protection Division, Office of Atmospheric Programs; Environmental Protection Agency, Mail Code 6205J, 1200 Pennsylvania Avenue NW., Washington DC 20460; telephone number (202) 343-9163, fax number, (202) 343-2338; e-mail address at [sheppard.margaret@epa.gov](mailto:sheppard.margaret@epa.gov). Notices and rulemakings under the SNAP program are available on EPA's Stratospheric Ozone Web site at <http://www.epa.gov/ozone/snap/regulations.html>. For copies of the full list of SNAP decisions in all industrial

sectors, contact the EPA Stratospheric Protection Hotline at (800) 296-1996.

**SUPPLEMENTARY INFORMATION:** This proposed action, if finalized, would provide motor vehicle manufacturers and their suppliers an additional refrigerant option for motor vehicle air conditioning (MVAC) systems. The refrigerant discussed in this proposed action is a non ozone-depleting substance.

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### I. Section 612 Statutory and Regulatory Background

Section 612 of the Clean Air Act (CAA) requires EPA to develop a

program for evaluating alternatives to ozone-depleting substances. EPA refers to this program as the Significant New Alternatives Policy (SNAP) program. The major provisions of section 612 and implementing regulations are:

#### A. Rulemaking

Section 612(c) requires EPA to promulgate rules making it unlawful to replace any class I (e.g., chlorofluorocarbon, halon, carbon tetrachloride, methyl chloroform, methyl bromide, and hydrobromofluorocarbon) or class II (e.g., 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.

#### B. Listing of Unacceptable/Acceptable Substitutes

Section 612(c) requires EPA to publish a list of the substitutes unacceptable for specific uses and to publish a corresponding list of acceptable alternatives for specific uses. The list of acceptable substitutes may be found at <http://www.epa.gov/ozone/snap/lists/index.html> and the lists of unacceptable substitutes, acceptable substitutes subject to use conditions and acceptable substitutes subject to narrowed use limits may be found at 40 CFR part 82 subpart G.

#### C. 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 six months.

#### D. 90-day Notification

Section 612(e) directs 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.

#### E. Outreach

Section 612(b)(1) states that the Administrator shall, where appropriate, 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.

#### F. Clearinghouse

Section 612(b)(4) requires the Agency to maintain 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.

#### G. EPA's Regulations Implementing Section 612

On March 18, 1994, EPA published the original rulemaking (59 FR 13044) which established the process for administering the SNAP program and issued EPA's first lists identifying acceptable and unacceptable substitutes in the major industrial use sectors. 40 CFR part 82, subpart G. These sectors include: Refrigeration and air conditioning; foam blowing; solvents 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 ODS.

For the purposes of SNAP, the Agency defines a "substitute" as any chemical, product substitute, or alternative manufacturing process, whether existing or new, intended for use as a replacement for a class I or class II substance in a sector that has historically used ODS. 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. CAA section 612(e); 40 CFR 82.176(a). This requirement applies to substitute manufacturers, but may include importers, formulators, or end-users, when they are responsible for introducing a substitute into commerce.

You can find a complete chronology of SNAP decisions and the appropriate **Federal Register** citations at EPA's Stratospheric Ozone Web site at: <http://www.epa.gov/ozone/snap/chron.html>. This information is also available from the Air Docket (see **ADDRESSES** section above for contact information).

## II. EPA's Proposed Decision on HFO-1234yf

EPA proposes that hydrofluoroolefin (HFO)-1234yf<sup>1</sup> is acceptable as a substitute for CFC-12<sup>2</sup> in new motor vehicle air conditioning systems (passenger cars and trucks), subject to use conditions. EPA proposes the following use conditions:

- HFO-1234yf MVAC systems must incorporate engineering strategies and/or devices so that leaks into the passenger compartment do not result in HFO-1234yf concentrations at or above the lower flammability limit (LFL)<sup>3</sup> of 6.2% v/v for more than 15 seconds;
- HFO-1234yf MVAC systems must incorporate engineering strategies and/or devices so that leaks into the engine compartment or vehicle electric power source storage areas do not result in HFO-1234yf concentrations at or above the LFL of 6.2% v/v for any period of time;
- HFO-1234yf MVAC systems must incorporate protective devices, isolation and/or ventilation techniques in areas where processes, procedures or upset conditions such as leaks have the potential to generate HFO-1234yf concentrations at or above 6.2% v/v in proximity to hybrid/electric vehicle electric power sources and exhaust manifold surfaces;
- HFO-1234yf MVAC systems must use unique fittings to be identified pursuant to SAE standard J639 and subject to EPA approval;
- HFO-1234yf MVAC systems must include a detailed label identifying the refrigerant and that the refrigerant is flammable;
- HFO-1234yf MVAC systems must have a high-pressure compressor cutoff switch installed on systems equipped with pressure relief devices; and
- Manufacturers must conduct and keep on file Failure Mode and Effect Analysis (FMEA) on the MVAC as stated in SAE J1739.

The proposed decision for HFO-1234yf applies to new MVAC systems only in passenger cars and trucks. We have previously determined that use of flammable refrigerants (which would include HFO-1234yf) in existing equipment as a retrofit is unacceptable (40 CFR part 82, subpart G, appendix B). We seek comment on whether these use conditions should be more protective or should be less protective.

<sup>1</sup> HFO-1234yf is also known as HFC-1234yf, R-1234yf or 2,3,3,3-tetrafluoroprop-1-ene, CAS Reg. No. 754-12-1.

<sup>2</sup> CFC-12 is also known as dichlorodifluoromethane, R-12, or Freon®-12, CAS Reg. No. 75-71-8.

<sup>3</sup> Unless stated otherwise, flammability limits discussed here are by volume.

## III. SNAP Criteria for Evaluating Alternatives

To determine whether a substitute is acceptable or unacceptable as a replacement for class I or II compounds, the Agency evaluates substitutes according to the criteria in § 82.180(a)(7). The Agency considers, among other things, toxicity, flammability, potential for occupational and general population exposure, and environmental effects including ozone depletion potential, atmospheric lifetime, impacts on local air quality and climate as well as ecosystem effects of the alternatives.

This proposal reflects additional information on flammable refrigerants in MVAC systems that has become available since the HFC-152a September 2006 proposed rule (71 FR 55140) and 2008 final rule (73 FR 33304), as well as EPA's latest understanding of all the available information. These additional or revised considerations include the increased proportion of new hybrid and electric vehicle sales in the U.S., passenger compartment volume, and improved assumptions for modeling exercises. In this rulemaking, HFO-1234yf risks are considered in relation to the risks associated with HFC-134a and other approved SNAP MVAC alternatives. HFC-134a is the predominant ODS refrigerant substitute used in passenger vehicle MVAC systems. Other SNAP-approved MVAC substitutes have not been implemented by car manufacturers or car air conditioning system manufacturers.

The EPA's SNAP program does not require that new substitutes be found risk-free to be found acceptable. In reviewing the acceptability of proposed substitutes, EPA considers how each substitute can be used within a specific end-use and the resulting risks and uncertainties surrounding potential health and environmental effects.

## IV. SNAP Evaluation of HFO-1234yf

In the following section, HFO-1234yf is evaluated in terms of the SNAP criteria defined in § 82.180(a)(7).

### A. Atmospheric Effects and Related Health and Environmental Impacts

HFO-1234yf has an ozone-depletion potential (ODP) of nearly zero<sup>4</sup> (Papadimitriou, 2007). By comparison, CFC-12 has an ODP of 1.0 and HFC-134a has an ODP of 0 (WMO, 2006).

<sup>4</sup> The National Oceanic and Atmospheric Administration is currently reviewing the ODP of HFO-1234yf and we will place this information in the docket if it becomes available during the course of this rulemaking.

Generally, the other approved SNAP MVAC substitutes have an ODP of less than 0.2.

The global warming potential (GWP) of HFO-1234yf is 4, based on a 100 year time horizon (Papadimitriou, 2007), compared to a value of 1 for carbon dioxide. For basis of comparison, CFC-12 has a GWP of 10,890 and HFC-134a has a GWP of 1,430 (WMO, 2006). The other SNAP-approved MVAC refrigerants generally have a GWP greater than 1000. HFO-1234yf has an atmospheric lifetime of only 11 days (Papadimitriou, 2007), compared to 100 years for CFC-12 and 14.0 years for HFC-134a. Thus, in terms of direct refrigerant emissions, HFO-1234yf would have a significantly smaller impact on climate compared to the ozone depleting substance it replaces and other common alternatives available in the same end use.

The Agency believes sufficient technical information is available on the ODP and GWP of HFO-1234yf, but the Agency welcomes additional comment on the ODP and GWP values described above. The Agency would give the greatest weight to peer-reviewed, published papers on HFO-1234yf as supporting evidence for discussion on ODP and GWP.

We note that one concern about HFO-1234yf atmospheric effects is trifluoroacetic acid (CF<sub>3</sub>COOH, TFA). TFA is produced from atmospheric oxidation of HFO-1234yf. EPA understands that the oxidation of HFO-1234yf yields >90% TFA, which is significantly higher than the yield of TFA from HFC-134a and other approved SNAP MVAC substitutes. TFA is naturally occurring, but at certain levels is toxic to aquatic life forms.

Initial analysis indicates that the projected maximum TFA concentration in rainwater should not result in a significant risk of aquatic toxicity. TFA concentration in rainwater was investigated because it is difficult to predict what the actual TFA concentrations will be. This is because concentrations of environmental contaminants in most fresh water bodies fluctuate widely due to varying inputs and outputs to most ponds, lakes, and streams. Also, use of rainwater TFA concentration as a point of comparison is more conservative than comparing TFA concentrations in water bodies because TFA is expected to be diluted in most freshwater bodies. The exception to this is vernal pools and similar seasonal water bodies that have no significant outflow capacity (ICF, 2009).

After taking into account the nature of HFO-1234yf degradation and the

resulting TFA concentration in rainwater; regional precipitation patterns; the geology of closed aquatic systems; and no observed effect concentrations (NOEC) for TFA, TFA production resulting from HFO-1234yf emissions is not expected to pose significant harm to aquatic communities in the near future. Additional research is necessary to determine if significant TFA loading is occurring in vernal pools near major populations (ICF, 2009). EPA is aware of studies to evaluate wet deposition effects that are underway at the National Institute of Advanced Industrial Science and Technology (AIST) based in Japan. Their results on wet deposition were not available at the time of this proposal's drafting, but EPA will consider any relevant findings by AIST that become available in a final version of this regulation and will provide an opportunity for additional public comment if the relevant findings suggest EPA should change its proposed determination.

Concerns about dry deposition of TFA also exist. Initial analysis indicates that it may be somewhat of a concern for photosynthesis (ICF, 2009). EPA is aware of studies to evaluate dry deposition effects that are underway at AIST. Their results on dry deposition were not available at the time of this proposal's drafting, but EPA will consider any relevant findings by AIST that become available in a final version of this regulation and will provide an opportunity for additional public comment if the relevant findings suggest EPA should change its proposed determination. The AIST findings will be posted in the docket (EPA-HQ-OAR-2008-0664) when they are available.

The Agency believes sufficient technical information on the TFA deposition from HFO-1234yf is available for the basis of this proposal; however, the Agency welcomes additional comment on HFO-1234yf's environmental and atmospheric effects. The Agency will give the greatest weight to published, peer-reviewed studies. The Agency requests comment on the impact of increased abundance of TFA resulting from the use of HFO-1234yf as an MVAC refrigerant in the U.S., and the potential impacts of U.S. and worldwide use of HFO-1234yf as an MVAC refrigerant. The National Oceanic and Atmospheric Administration (NOAA) informed EPA that a follow-on study of the Papadimitriou 2007 work is under way. EPA anticipates the results of this study will be published and be made publicly available before the Agency issues a final rule on the acceptability of HFO-

1234yf under the SNAP Program. If the study becomes available, EPA will consider that information in determining how to move forward on this proposed determination for HFO-1234yf.

Currently available analysis on the atmospheric and local air quality impacts of HFO-1234yf assumes an emissions rate very similar to HFC-134a. This assumption leads to a very conservative emission rate because it is highly likely HFO-1234yf will have a lower leak rate compared to HFC-134a because HFO-1234yf will cost approximately ten times more than HFC-134a. There will be an economic basis for conserving and preventing the release of HFO-1234yf. But the same logic implies that the market adoption of this alternative may not be high, resulting in even lower total emissions. We seek comment on whether it is appropriate to analyze environmental impacts of HFO-1234yf based on the current emission rate for HFC-134a in MVAC, and if not, what emission rate EPA should use in our environmental analyses.

#### *B. General Population Risks From Ambient Exposure to Compounds With Direct Toxicity and to Increased Ground-Level Ozone*

##### *Toxicity:*

EPA's New Chemicals Program, mandated by Section 5 of the Toxic Substances Control Act (TSCA), conducted a premanufacture review of HFO-1234yf. This review assessed the potential environmental and human health risks associated with the substance (Docket EPA-HQ-OPPT-2008-0918). Based on test data on HFO-1234yf, EPA has human health concerns for developmental toxicity and lethality via inhalation exposure.

The Workplace Environmental Exposure Limit (WEEL) Committee of the American Industrial Hygiene Association has established a WEEL of 500 parts per million (ppm) by volume on an eight-hour time-weighted average (TWA) for HFO-1234yf. See docket EPA-HQ-OAR-2008-0664 for the WEEL Committee rationale. The Committee established a WEEL of 1,000 ppm by volume on an eight-hour TWA for HFC-134a.

In terms of cardiotoxicity, HFC-134a is a cardiac sensitizer at 75,000 ppm with a no observed adverse effect level (NOAEL) of 50,000 ppm. HFO-1234yf is negative in the cardiac sensitization test at exposures of up to 120,000 ppm. (See "Acute Cardiac Sensitization Study of HFO-1234ze and HFO-1234yf in Dogs" in docket EPA-HQ-OAR-2008-0664).

##### *Ground-level Ozone:*

HFO-1234yf could impact local air quality (LAQ) through formation of ground-level ozone. Photochemical ozone creation potential (POCP) describes a compound's potential to form ground-level ozone. HFO-1234yf has a higher POCP than the predominant MVAC refrigerant, HFC-134a. HFO-1234yf has a POCP comparable to ethylene; ethylene is an alkene. According to the Intergovernmental Panel on Climate Change/Technology and Economic Assessment Panel Special Report, alkenes "have the potential to significantly influence ozone formation on the urban and regional scales." Papadimitriou et al. (2007) indicate that, "studies are needed to quantify the degradation of [HFO-1234yf] under atmospheric conditions for OH- and Cl-atom-initiated chemistry to fully evaluate the impact of these compounds and their degradation products on climate and air quality."

An initial assessment says that HFO-1234yf could potentially increase ground level ozone by >1-4% in certain areas, which may affect attainment with the National Ambient Air Quality Standard for ozone (ICF, 2009). The reader should note ground-level ozone formation is highly variable and depends on several factors, such as availability of chemical inputs, and sunlight and heat. EPA notes that HFO-1234yf is defined as a volatile organic compound under Clean Air Act regulations (see 40 CFR 51.100(s)) addressing the development of State Implementation Plans (SIPs) to attain and maintain the national ambient air quality standards. The Agency requests comment on the LAQ impacts of HFO-1234yf use as an MVAC refrigerant in the U.S. and globally. The Agency would give the greatest weight to peer-reviewed, published papers for comments on LAQ impacts. As stated earlier, NOAA's follow-on study of HFO-1234yf is expected before the Agency issues a final rule on the acceptability of HFO-1234yf under the SNAP Program. In the meantime, the Agency requests comment on whether a >1-4% increase in ground level ozone is significant.

#### *C. Ecosystem Risks*

See discussion under Atmospheric Effects and Related Health and Environmental Impacts.

#### *D. Occupational Risks*

Occupational risks could come about during the manufacture of the refrigerant, initial installation of the refrigerant at the car assembly plant or servicing of the MVAC system. The

TSCA New Chemicals Program review of HFO-1234yf determined that significant industrial or commercial worker exposure is unlikely due to CAA section 609 technician training, the use of CAA section 609 certified refrigerant handling equipment, and other protective measures. Therefore, the proposed manufacture, processing, and use of HFO-1234yf are not expected to present an unreasonable risk to workers. More details can be found at the New Chemicals Program's docket for HFO-1234yf, EPA-HQ-OPPT-2008-0918, and in the memorandum, "Risk Assessment: P070601 Reflecting Deliberations and Decisions from the 3/4/09 Dispo[sition] Meeting" in dockets EPA-HQ-OAR-2008-0664 and EPA-HQ-OPPT-2008-0918.

In regards to flammability, with proper mitigation and training, the frequency of exposure to flammable HFO-1234yf concentrations in service situations can be managed. Based on feedback from certified MVAC service technicians, EPA believes that the flammability potential of HFO-1234yf is within the range of other substances that automotive service technicians encounter routinely (See docket EPA-HQ-OAR-2004-0488-0017). Training, mitigation, and limiting the frequency of exposure can reduce any potential risks to the technicians. Input from technicians confirms this perspective. Some car manufacturers have suggested that new training for HFO-1234yf should be required for all MVAC technicians. EPA requests comment on whether additional training for service technicians on HFO-1234yf should be required so that they are knowledgeable about the different hazards associated with working on HFO-1234yf MVAC systems compared to the two systems currently in use—i.e., CFC-12 or HFC-134a systems. Any specific training requirements would be adopted in a follow-up Section 609 rulemaking. At this point, EPA recommends, but does not propose to require, additional training and requests input on the need for required training for persons using HFO-1234yf in an MVAC service/maintenance/disposal scenario.

#### E. Consumer Risks

Risks to consumers as vehicle occupants have been evaluated, in the context of HFO-1234yf's flammability and toxicity.

Based on American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 34 testing, HFO-1234yf's lower flammability limit (LFL) is 6.2% and upper flammability limit is 12.3% (Gradient, 2008), making this refrigerant

less flammable than HFC-152a, the only flammable SNAP-approved MVAC refrigerant. Depending on the charge size of an HFO-1234yf MVAC system, which can range from as little as 400 grams to as much as 1600 grams (ICF, 2008a), it is possible in a worst case scenario to reach a flammable concentration of HFO-1234yf inside the passenger compartment.

In terms of toxicological concerns, the TSCA New Chemicals Program review of HFO-1234yf determined that potential consumer (passenger) exposure from refrigerant leak into the passenger compartment of a vehicle is not expected to present an unreasonable risk. However, consumer exposure from filling, servicing, or maintaining MVAC systems without professional training and the use of CAA Section 609 certified equipment may cause serious health effects. Therefore, to prevent this risk EPA is also promulgating a Significant New Use Rule (SNUR) under section 5(a)(2) of TSCA (docket EPA-HQ-OPPT-2008-0918). This SNUR would require submission of a Significant New Use Notice to EPA at least 90 days before commencing an activity that is designated as a significant new use of HFO-1234yf.

#### F. Flammability

The proposed upper limit of occupant exposure to HFO-1234yf protects against the possibility of flammability. It is important to note that when burned or exposed to high heat, HFO-1234yf like all fluorocarbons, including CFC-12 and HFC-134a, forms acid byproducts including hydrofluoric acid (HF)—a severe respiratory irritant.<sup>5</sup> The Occupational Safety and Health Administration (OSHA) has set a Permissible Exposure Limit (PEL)—8-hour occupational exposure limit—for HF at 3 ppm which is the upper allowable limit for worker exposure. Passenger exposure to HF could occur as a result of a leak in the presence of an ignition source. EPA's approach in setting use conditions is to prevent any fire risk associated with HFO-1234yf use in MVAC systems, which would also prevent any potential passenger exposure to HF. EPA understands that there is work currently underway that examines the issue of pre-ignition HF formation. If those studies indicate the potential for significant pre-ignition HF formation, EPA will consider that information in determining how to move forward with this proposed rule. Additionally, EPA welcomes any

<sup>5</sup> These decomposition products have a sharp, acrid odor even at concentrations of only a few parts per million.

comment on that study or other studies of which EPA is not aware that address the potential for pre-ignition HF formation.

#### Flammable Concentrations Inside the Passenger Compartment

SAE International commissioned a risk assessment of HFO-1234yf in MVAC systems (Gradient, 2008) based on the analytical framework developed by EPA and the U.S. Army in a 2006 alternative refrigerant risk analysis (EPA-HQ-OAR-2004-0488-0025.2). The risk assessment incorporated the results of computational fluid dynamic (CFD) modeling (by DuPont) of an HFO-1234yf leak into the passenger compartment. DuPont conducted a limited assessment of refrigerant leakage into the passenger compartment by modeling the first 200 seconds of a leak into the passenger compartment. Based on their analysis, at least one of their simulations (idle vehicle, low fan, 0.5mm orifice leak, and recirculation mode), led to exceeding the HFO-1234yf LFL inside the passenger compartment. To supplement these results, SAE International updated the modeling results with field test assessments of leaking refrigerant into the passenger compartment of Renault/PSA/Fiat and General Motors medium and small size cars. The test results show that there are some scenarios where the LFL was exceeded (Gradient, 2009). According to the SAE International risk assessment report, there is "a potential ignition hazard if a smoking-related ignition source is present" (Gradient, 2008). However, the report references a separate field study performed by Exponent where an experimental release of HFO-1234yf was released into the passenger and engine compartment of a large vehicle, a 1997 Ford Crown Victoria (Exponent, 2008). In this field study, tested releases of HFO-1234yf did not produce concentrations above the LFL. However, given the fact that flammable conditions can come about in the passenger compartment, particularly in medium and small size cars, the Agency believes it is prudent to propose a use condition that addresses a possible ignition hazard.

The Agency requests public comment on the SAE International/DuPont and Exponent reports. Specifically, the Agency requests comment on the appropriateness of the simulated charge size that was used by each report. The SAE International/DuPont report simulated a 2001 Ford Crown Victoria with a 691 gram HFO-1234yf charge. The Exponent report used a 1997 Ford Crown Victoria with a charge size of 693

grams. The 1997 and 2001 Ford Crown Victorias were originally designed with approximately 966 gram and 1097 grams HFC-134a charge size systems (MACS, 2005). Honeywell presentations have indicated the HFO-1234yf charge size is 90–95% of a HFC-134a charge size (Honeywell, 2008). Based on the original refrigerant charge size of these Crown Victorias, the HFO-1234yf charge sizes, in both simulations, are not consistent with the 90–95% HFC-134a charge sizes described in Honeywell presentations and the Crown Victorias are undercharged. Charge size is an important element in determining the probability of a flammable concentration. EPA requests comment on whether the charge sizes used in the DuPont and Exponent simulations are consistent with the actual charge sizes that would need to be used in MVAC for these vehicles.

The Agency also requests comment on the use of a large-size car as a worst-case car scenario for a MVAC risk assessment. Based on an analysis done in 2004–2005, the EPA/U.S. Army risk assessment (Docket No. EPA-HQ-OAR-2004-0488-0025.2) concluded large passenger cars provided the highest ratio of refrigerant charge to interior compartment volume, and large passenger cars were broadly representative of the world fleet. Since that analysis was performed, there is data to indicate the sales of small cars have increased, and such sales are likely to continue to increase given a manufacturing shift towards smaller cars (ICF, 2008b). A recent analysis showed higher ratios of refrigerant charge to interior compartment volume in small trucks and two-seaters, compared to the large car used in SAE's risk assessment (ICF, 2008a). A higher ratio of refrigerant charge to interior compartment volume could lead to more occurrences of flammable concentrations.

#### Flammable Concentrations in the Engine Compartment

According to the SAE International report, "the highest value measured in the engine compartment (87,000 ppm) suggests a potential ignition hazard" (Gradient, 2008). Although an engine compartment field test suggested that it was not possible to ignite HFO-1234yf (Dupont 2008), temperatures that could ignite the refrigerant exist on the exhaust manifold. Most car manufacturers cover the exhaust manifold with a heat shield, but this is not a requirement. EPA requests comment on the proposed use condition that requires protective devices under the vehicle hood to avoid any

flammable concentrations of refrigerant coming into the vicinity of hot exhaust manifold surfaces.

Hybrid and electric vehicle sales in the U.S. have dramatically increased over the past decade (ICF, 2008b). To address this change in the market, EPA considered the potential for another ignition source from the electric power source in hybrid and electric cars that is not present with gasoline-only vehicles. According to DuPont and Honeywell's *Guidelines for Use and Handling of HFO-1234yf*, "isolation techniques or other suitable methods should be used to prevent battery and power system sparks/arc. In areas where processes, procedures or upset conditions such as leaks have the potential to generate flammable HFO-1234yf vapor-in-air concentrations in proximity to hybrid vehicle electric power sources, isolation and/or ventilation should be used." (DuPont/Honeywell, 2008).

In addition, current hybrid vehicles with HFC-134a MVAC systems use polyolester (POE) oil as a system lubricant, primarily because polyalkylene glycol (PAG) oils are conductive and can lead to shorts. It is not clear if HFO-1234yf MVAC systems can work with the POE oil that is needed for hybrid vehicles. The EPA requests comment on whether the flammability of HFO-1234yf combined with PAG/POE oils may create a larger concern under the hood of hybrid and electric vehicles.

EPA is aware of SAE International activities to develop a standard on specific risk mitigation strategies to avoid flammable concentrations under the hood. An excerpt from the latest draft of a standard that covers this topic is available in the docket. EPA requests comment on using such an SAE J standard as a use condition to protect against flammable concentrations under the hood. If SAE adopts a standard that reflects a different intent than in the current draft and if EPA determines to include such a different standard as a use condition, EPA would consider whether further comment is needed before it issued a final rule with that use condition.

#### Other Flammable Refrigerants and Risk Mitigation

Hydrocarbon refrigerants are unacceptable (prohibited) in MVAC systems under the SNAP program and are specifically prohibited in several states. Hydrocarbons or hydrocarbon blends must not be used in HFO-1234yf MVAC systems.

The use conditions described in this action are specific to HFO-1234yf and

do not apply to other flammable refrigerants. HFO-1234yf is less flammable and has a higher LFL than HFC-152a, and the proposed use conditions for HFO-1234yf would not be adequate for HFC-152a. However, the interior passenger compartment risk mitigation strategies described in the HFC-152a proposed and final rules (71 FR 55140 and 73 FR 33304, respectively) can be protective risk mitigation strategies for HFO-1234yf. EPA refers to the previous discussions on HFC-152a risk mitigation strategies for manufacturers to consider when deciding what risk mitigation strategies might be used if HFO-1234yf is found acceptable subject to use conditions.

#### G. Cost and Availability of the Substitute

Definitive costs for the refrigerant have not been shared with the Agency. Based on estimates from Honeywell and DuPont, the cost of HFO-1234yf will be, at least initially, approximately \$40–60/pound (Weissler, 2008). The cost of the refrigerant will depend on several factors, including, but not limited to, how much refrigerant will be available for sale, the quality of the refrigerant, and where the refrigerant is manufactured. The cost of HFO-1234yf will likely be more than HFC-134a because the HFO-1234yf manufacturing process requires more energy and more steps than HFC-134a.

The manufacturers of HFO-1234yf state the chemical can be available when the market requires it. At the moment there are no dedicated HFO-1234yf manufacturing plants.

#### H. Proposed Conclusion on Overall Impacts on Human Health and the Environment

On the whole, EPA proposes that the conditioned use of HFO-1234yf does not present a significantly larger risk to human health and the environment compared to HFC-134a, the predominant ODS refrigerant substitute in passenger vehicle MVAC systems and other SNAP-approved MVAC refrigerant alternatives, and in many cases likely poses less risk. Use conditions are necessary to address the flammability concerns associated with use of HFO-1234yf. If it is determined that there are possible atmospheric effects of HFO-1234yf, those would be controlled by Clean Air Act Section 608 and Section 609 regulatory requirements that prohibit the venting, or release, of refrigerant during the service, maintenance and disposal of refrigeration and A/C equipment. EPA welcomes comment on this proposal; the Agency prefers peer-reviewed,

published papers for supporting documentation on comments concerning technical issues.

The conditions we are proposing for the safe use of HFO-1234yf are outlined below.

## V. HFO-1234yf MVAC System Proposed Use Conditions

### *Use Conditions for HFO-1234yf*

EPA proposes to find HFO-1234yf acceptable with use conditions in new MVACs as a substitute for CFC-12. This proposed determination is limited to MVAC systems on passenger cars and light-duty trucks; this proposed determination does not include any other MVAC systems, including those on buses, trains, boats, off-road equipment, or other vehicles. The submission did not specifically request use in these other MVAC systems and the risks associated with these MVAC systems have not been evaluated.

EPA proposes to find HFO-1234yf acceptable with the following use conditions:

- HFO-1234yf MVAC systems must incorporate engineering strategies and/or devices so that leaks into the passenger compartment do not result in HFO-1234yf concentrations at or above the lower flammability limit (LFL) of 6.2% v/v for more than 15 seconds;
- HFO-1234yf MVAC systems must incorporate engineering strategies and/or devices so that leaks into the engine compartment or vehicle electric power source storage areas do not result in HFO-1234yf concentrations at or above the LFL of 6.2% v/v for any period of time;
- HFO-1234yf MVAC systems must incorporate protective devices, isolation and/or ventilation techniques in areas where processes, procedures or upset conditions such as leaks have the potential to generate HFO-1234yf concentrations at or above 6.2% v/v in proximity to hybrid/electric vehicle electric power sources and exhaust manifold surfaces;
- HFO-1234yf MVAC systems must use unique fittings to be identified pursuant to SAE standard J639 and subject to EPA approval;
- HFO-1234yf MVAC systems must include a detailed label identifying the refrigerant and that the refrigerant is flammable;
- HFO-1234yf MVAC systems must have a high-pressure compressor cutoff switch installed on systems equipped with pressure relief devices; and
- Manufacturers must conduct and keep on file Failure Mode and Effect Analysis (FMEA) on the MVAC as stated in SAE J1739.

EPA requests public comment on the proposed use conditions for HFO-1234yf. Amongst other topics, EPA requests comment on whether interior passenger compartment limits to HFO-1234yf should apply only when the vehicle ignition is 'on.'

### *General SNAP MVAC Use Conditions*

On October 16, 1996, EPA promulgated a final rule (61 FR 54029) establishing certain conditions on the use of any refrigerant used as a substitute for CFC-12 in MVAC systems (appendix D to subpart G of 40 CFR part 82). That rule provides that EPA would list new refrigerant substitutes in future notices of acceptability and all such refrigerants would be subject to the use conditions stated in that rule. Therefore, EPA is establishing a use condition that unique fittings must be identified pursuant to SAE standard J639 adopted in 2009 and approved by EPA.

## VI. Additional Information Requested

The Agency seeks comments on topics related to HFO-1234yf that are beyond the scope of this Section 612 proposed rulemaking regarding use of HFO-1234yf in new MVAC systems, but which could be relevant to future actions on HFO-1234yf as a substitute refrigerant. Please send information on any of the following issues to Margaret Sheppard, [sheppard.margaret@epa.gov](mailto:sheppard.margaret@epa.gov).

### *Retrofit Use of HFO-1234yf*

The Honeywell submission requested SNAP review of HFO-1234yf in new MVAC applications only. Honeywell did not petition the Agency to review retrofit use of HFO-1234yf. The Agency has not fully evaluated the safety issues associated with using HFO-1234yf to service existing CFC-12 or HFC-134a designed MVAC systems. EPA rules prohibit the use of flammable refrigerants in retrofit systems. 40 CFR part 82, subpart 2, App. B (61 FR 54029). Any person interested in using HFO-1234yf in retrofit systems would need to petition EPA to change the existing unacceptable determination. Such an option would require a separate SNAP submission and evaluation by EPA. EPA suspects that car manufacturers are the best qualified, and likely the only qualified entity to undertake such an application given the complexities of going to HFO-1234yf. The Agency requests comment on whether retrofit kits can effectively meet the requirements identified in this proposal for new MVAC systems and if retrofits have a detrimental impact on the MVAC system fuel efficiency. The Agency also specifically requests comments from car manufacturers on

retrofitting existing MVAC systems to HFO-1234yf.

### *Retrofitting HFO-1234yf MVAC Systems to Other Alternative Refrigerants*

Individuals, service shops, or manufacturers might consider refilling or charging MVAC systems designed for HFO-1234yf with another refrigerant. The Agency has not evaluated the safety issues associated with retrofitting HFO-1234yf MVAC systems with other MVAC refrigerants previously approved under SNAP. Because other refrigerants may be less expensive, the Agency is concerned that consumers may consider retrofitting HFO-1234yf systems to use other refrigerants. The use conditions proposed for HFO-1234yf are specific to the properties of this chemical, and would not be protective of fire hazards that may come about from, for example, hydrocarbon refrigerant (HCR) that is more flammable. HCRs are more flammable than HFO-1234yf. Besides the safety concerns of retrofitting to another refrigerant, the practice could lead to increased refrigerant emissions because of materials compatibility or/and leakage due to hose permeation.

This practice may come about if the price of HFO-1234yf is high, or if there is limited supply of HFO-1234yf. EPA requests comments on this type of retrofitting, and provisions that need to be made to address this issue, particularly in the context of SNAP's general requirement for unique fittings for each unique SNAP listed refrigerant.

## VII. Section 609 Requirements for HFO-1234yf

Service equipment, technician certification and end-of-life disposal specifications will be addressed in a follow-on rulemaking(s) under Section 609 of the Clean Air Act.

## VIII. Statutory and Executive Order Reviews

### *A. Executive Order 12866: Regulatory Planning and Review*

Under Executive Order (EO) 12866 (58 FR 51735, October 4, 1993), this action is a "significant regulatory action." It raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order. Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

### B. Paperwork Reduction Act

This action does not impose any new information collection burden. Burden is defined at 5 CFR 1320.3(b). This proposed rule is an Agency determination. It contains no new requirements for reporting. The only recordkeeping requirement involves customary business practice. The Office of Management and Budget (OMB) has previously approved the information collection requirements contained in the existing regulations in subpart G of 40 CFR part 82 under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* and has assigned OMB control numbers 2060–0226 (EPA ICR No. 1596.05). This Information Collection Request (ICR) included five types of respondent reporting and record keeping activities pursuant to SNAP regulations: submission of a SNAP petition, filing a SNAP/TSCA Addendum, notification for test marketing activity, record keeping for substitutes acceptable subject to use restrictions, and record-keeping for small volume uses. This proposed rule requires minimal record-keeping of studies done to ensure that MVAC systems using HFO–1234yf meet the requirements set forth in this rule. Because it is customary business practice that automotive systems manufacturers and automobile manufacturing companies conduct and keep on file failure mode and effect analysis (FMEA) on any potentially hazardous part or system, we believe this requirement will not impose an additional paperwork burden.

### C. Regulatory Flexibility Act (RFA)

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute 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 organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; for NAICS code 336111 (Automobile manufacturing), it is <1000 employees; for NAICS code 336391 (Motor Vehicle Air-Conditioning Manufacturing), it is <750 employees; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district

with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this proposed rule on small entities, we certify that this action will not have a significant economic impact on a substantial number of small entities. This proposed rule will not impose any requirements on small entities. The requirements of this proposed rule impact car manufacturers and car air conditioning system manufacturers only; none of these businesses qualify as small entities. Additionally, car manufacturers and car air conditioning system manufacturers are not mandated to move to HFO–1234yf MVAC systems. EPA is simply listing HFO–1234yf as an acceptable alternative with use conditions in new MVAC systems. This rule allows the use of this alternative to ozone depleting substances in the MVAC sector and outlines the conditions necessary for safe use. By approving this refrigerant under SNAP, EPA provides additional choice to the automotive industry which, if adopted, would reduce the impact of MVACs on the global environment. This rulemaking does not mandate the use of HFO–1234yf as a refrigerant in new MVACs.

We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

### D. Unfunded Mandates Reform Act

This rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. This regulation applies directly to entities that manufacture MVAC systems with the proposed substitute, and not to governmental entities. This proposed rule does not mandate a switch to this substitute, but rather adds to the list of available substitutes from which a manufacturer may choose; consequently, there is no direct economic impact on entities from this rulemaking. Also, production-quality HFO–1234yf MVAC systems are not manufactured yet. Consequently, no change in business practice is required by this proposed rule. This action provides additional technical options allowing greater flexibility for industry in designing consumer products. Thus,

this rule is not subject to the requirements of sections 202 or 205 of UMRA.

This rule is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. As noted above, this proposed regulation would not apply to any governmental entity. EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year.

### E. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This proposal does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This regulation applies directly to entities that manufacture MVAC systems with the proposed substitute and not to governmental entities. Thus, Executive Order 13132 does not apply to this rule.

### F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). This proposed rule does not significantly or uniquely affect one or more Indian tribes, the relationship between the Federal Government and Indian tribes, or the distribution of power and responsibilities between the Federal Government and Indian tribes because this regulation applies directly to entities that manufacture MVAC systems with the proposed substitute and not to governmental entities. Thus, Executive Order 13175 does not apply to this action.



EPA specifically solicits additional comment on this proposed action from tribal officials.

*G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

This action is not subject to EO 13045 (62 FR 19885, April 23, 1997) because it is not economically significant as defined in EO 12866, and because the Agency does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action's health and risk assessments are contained in Section IV of this proposed rule.

The public is invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure to HFO-1234yf.

*H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

This action is not a "significant energy action" as defined in Executive Order 13211 (66 FR 18355 (May 22, 2001)), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This action would impact manufacturing alternative MVAC systems. Preliminary information indicates that these new systems will have similar fuel efficiency compared to currently available MVAC systems. Therefore, we conclude that this rule is not likely to have any adverse effects on energy supply, distribution or use.

*I. National Technology Transfer and Advancement Act*

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Public Law No. 104-113, Section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking involves technical standards. EPA proposes to use the SAE International standard J639, which addresses requirements for safety and reliability for HFO-1234yf systems. SAE International is the international

standard setting body for motor vehicle requirements. SAE International standards are globally recognized and adopted by all major car manufacturers and system suppliers. These standards can be obtained from <http://www.sae.org/technical/standards/>.

EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify other potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

*J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

Executive Order (EO) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations; HFO-1234yf is a non ozone-depleting substance with a low GWP. Based on the toxicological and atmospheric work described earlier, HFO-1234yf will not have any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This NPRM proposes to require specific use conditions for MVAC systems, if car manufacturers chose to make MVAC systems using this low GWP refrigerant alternative.

**IX. References**

The documents below are referenced in the preamble. All documents are located in the Air Docket at the address listed in section titled "ADDRESSES" at the beginning of this document. Unless specified otherwise, all documents are available in Docket ID No. EPA-HQ-OAR-2008-0664 at <http://www.regulations.gov>.

**References**

Dupont and Honeywell. Guidelines for Use and Handling of HFO-1234yf (v8.0).

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**List of Subjects in 40 CFR Part 82**

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

Dated: October 13, 2009.

**Lisa P. Jackson,**  
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.

**Subpart G—Significant New Alternatives Policy Program**

adding one new entry to the end of the table to read as follows:

2. The first table in Appendix B to Subpart G of Part 82 is amended by

**Appendix B to Subpart G of Part 82—Substitutes Subject to Use Restrictions and Unacceptable Substitutes**

REFRIGERANTS-ACCEPTABLE SUBJECT TO USE CONDITIONS

Application	Substitute	Decision	Conditions	Comments
* CFC–12 Automobile Motor Vehicle Air Conditioning (New equipment in passenger cars and trucks only).	* HFO–1234yf as a substitute for CFC–12.	* Acceptable subject to use conditions.	* Engineering strategies and/or devices must be incorporated into the system such that leaks into the free space <sup>1</sup> of the passenger compartment do not result in HFO–1234yf concentrations of 6.2% v/v or above in any part of the free space <sup>1</sup> inside the passenger compartment for more than 15 seconds. Engineering strategies and/or devices must be incorporated into the system such that leaks into the engine compartment or vehicle electric power source storage areas do not result in HFO–1234yf concentrations of 6.2% v/v or above for any period of time. HFO–1234yf MVAC systems must incorporate protective devices, isolation and/or ventilation techniques in areas where processes, procedures or upset conditions such as leaks have the potential to generate HFO–1234yf concentrations at or above 6.2% v/v in proximity to exhaust manifold surfaces and hybrid/electric vehicle electric power sources. Manufacturers must adhere to all the safety requirements listed in the Society of Automotive Engineers (SAE) Standard J639 (adopted 2009), including unique fittings and flammable refrigerant warning label and high-pressure compressor cutoff switch and pressure relief devices. Manufacturers must conduct and keep on file Failure Mode and Effect Analysis (FMEA) on the MVAC as stated in SAE J1739 (adopted 2009).	* Additional training for service technicians recommended.  Observe Pre-manufacture Notice (PMN) regulatory decision.

<sup>1</sup> Free space is defined as the space inside the passenger compartment excluding the space enclosed by the ducting in the HVAC module.

\* \* \* \* \*  
[FR Doc. E9–25106 Filed 10–16–09; 8:45 am]  
BILLING CODE 6560–50–P

**DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**50 CFR Part 224**  
**RIN 0648–AV15**  
**Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Proposed rule; notification of extension of public comment period.  
**SUMMARY:** We, the National Marine Fisheries Service (NMFS), are issuing this notice to advise the public that NMFS is extending the public comment period for proposed regulations under the Endangered Species Act and Marine Mammal Protection Act to prohibit vessels from approaching killer whales within 200 yards and from parking in the path of whales from vessels in inland waters of Washington State. The proposed regulations would also prohibit vessels from entering a conservation area during a defined season. The proposed rule was published July 29, 2009, opening a 90-day public comment period and noticing two public meetings. In response to requests from the public, on September 17, 2009, we published a

notice in the **Federal Register** announcing an additional public meeting. We are issuing this notice to announce an 80-day extension of the public comment period in response to requests to provide more time for the public to review the proposed regulation and provide comments.

We recognize that by extending the public comment period, we will not have sufficient time to issue a final rule prior to the 2010 summer boating season. We continue to believe that it is important to address the adverse effects of vessel traffic on killer whales in the near future. In light of the requests we have received for an extension of the comment period, however, we believe additional public outreach will enhance both NMFS’ understanding of public concerns and the public’s understanding of the basis for our