Authority: 5 U.S.C. 552(a); 13 U.S.C 301–307; 18 U.S.C. 1692–1737:39 U.S.C. 101, 401, 403, 404, 414, 416, 3001–3011, 3201–3219, 3403–3406, 3621, 3622, 3626, 3632, 3633, and 5001.

2. Revise the following sections of *Mailing Standards of the United States Postal Service,* Domestic Mail Manual (DMM), as follows:

Mailing Standards of the United States Postal Service, Domestic Mail Manual (DMM)

* * * * *

700 Special Standards

* * * * *

707 Periodicals

* * * * *

12.0 Nonbarcoded (Presorted) Eligibility

12.1 Basic Standards

* * * * *

12.1.3 Barcode Quality

[*Revise the text of 12.1.3 as follows:*]

Any Intelligent Mail barcode on a mailpiece must be correct for the delivery address and meet the standards in 708.4.0 and 708.3.0.

* * * * *

13.0 Carrier Route Eligibility

13.1 Basic Standards

* * * * *

13.1.3 Barcode Quality

[*Revise the text of 13.1.3 as follows:*]

Any Intelligent Mail barcode on a mailpiece must be correct for the delivery address and meet the standards in 708.4.0 and 708.3.0.

* * * * *

14.0 Barcoded (Automation) Eligibility

[*Revise 14.1 to include the standards in current 14.1.1, with revised text as follows:*]

14.1 Basic Standards

[*Revise the introductory text of 14.1 as follows:*]

All pieces in a Periodicals barcoded (automation) mailing must:

* * * * *

[*Revise the first sentence of item 14.1.1c as follows:*]

c. Bear an accurate Intelligent Mail barcode encoded with the correct delivery point routing code, matching the delivery address and meeting the standards in 202.5.0 (for letters), 302.4.0 (for flats), and 708.4.0.

* * * * *

[*Delete the heading of current 14.1.1, and delete current 14.1.2, Enclosed Reply Cards and Envelopes, in its entirety.*]

* * * * *

14.5 Address Standards for Barcoded Pieces

* * * * *

14.5.3 Numeric Delivery Point Barcode

[*Revise the text of 14.5.3 as follows:*]

A numeric equivalent of the delivery point routing code is formed by adding two digits directly after the ZIP+4 code.

* * * * *

We will publish an appropriate amendment to 39 CFR part 111 to reflect these changes.

Stanley F. Mires,

Attorney, Legal Policy & Legislative Advice.

[FR Doc. 2012–13636 Filed 6–5–12; 8:45 am]

BILLING CODE 7710–12–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 82

[EPA–HQ–OAR–2004–0488; FRL–9668–8]

RIN 2060–AM54

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

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Pursuant to the U.S. Environmental Protection Agency (EPA)'s Significant New Alternatives Policy (SNAP) program, this action lists carbon dioxide (CO_2) or R–744, as acceptable substitute, subject to use conditions, in the motor vehicle air conditioning (MVAC) end-use for motor vehicles (i.e., passenger cars, light-duty and heavy-duty vehicles) within the refrigeration and air-conditioning sector. This final rule only concerns the use of CO_2 in MVAC systems designed specifically for the use of CO_2 refrigerant. The substitute is non-ozone-depleting and therefore does not contribute to stratospheric ozone depletion.

DATES: This final rule is effective on August 6, 2012. The incorporation by reference of a certain publication listed in this rule is approved by the Director of the Federal Register as of May 31, 2011.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–HQ–OAR–2004–0488. All documents in the docket are listed on the *www.regulations.gov* Web site. Although listed in the index, some information is not publicly available, e.g., confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through *www.regulations.gov* or in hard copy from the EPA Air and Radiation Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave. NW., Washington, DC. This Public Reading Room 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 and Radiation Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: Yaidi Cancel, Stratospheric Protection Division, Office of Air and Radiation, MC 6205J, Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460; telephone number: (202) 343–9512; fax number: (202) 343–2338; email address: *cancel.yaidi@epa.gov.*

SUPPLEMENTARY INFORMATION: This final action provides motor vehicle manufacturers and their suppliers with a refrigerant option subject to use conditions for motor vehicle air conditioning systems for use in new vehicles. The refrigerant discussed in this action, carbon dioxide (R–744, CO_2) is non-ozone-depleting and has a global warming potential (GWP) [1] of 1.

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[1] GWP, is defined as the ratio of heat trapped by one unit mass of the greenhouse gas to that of one unit mass of CO_2 over a specified period of time. Consistent with the international standards under the United Nations Framework Convention on Climate Change (UNFCCC), all GWPs in this rule are given using a 100-year period (IPCC, 1996).

I. Does this action apply to me?

This final rule lists carbon dioxide (CO_2)[2], also known as R–744, as an acceptable substitute subject to use conditions for use as a refrigerant in new motor vehicle air conditioning (MVAC) systems designed specifically for the use of CO_2 refrigerant in motor vehicles[3]. Businesses in this end-use that may want to use CO_2 in MVAC systems include:

- Motor vehicle manufacturers
- Motor vehicle air conditioning service and repair shops

Regulated entities may include:

TABLE 1—POTENTIALLY REGULATED ENTITIES, BY NORTH AMERICAN INDUSTRIAL CLASSIFICATION SYSTEM (NAICS) CODE

Category	NAICS code	Description of regulated entities
Industry	336111, 336112, 336120	Motor Vehicle Manufacturing.
Services	811198	Vehicle Air Conditioning Repair.

This table is not intended to be exhaustive, but rather a guide regarding entities likely to be regulated by this action. If you have any questions about whether this action applies to a particular entity, consult the person listed in the preceding section, **FOR FURTHER INFORMATION CONTACT**.

II. What abbreviations and acronyms are used in this action?

ACGIH—American Conference of Governmental Industrial Hygienists
ASE—National Institute for Automotive Service Excellence
CAA—Clean Air Act
CAS—Chemical Abstracts Service
CBI—confidential business information
CFC—chlorofluorocarbon
CFC-12—the chemical dichlorodifluoromethane, CAS Reg. No. 75–71–8
CFD—computational fluid dynamics
CFR—Code of Federal Regulations
CNS—central nervous system
CO_2—carbon dioxide, CAS Reg. No. 124–38–9, also known as R–744
CRP—Cooperative Research Program
EPA—the United States Environmental Protection Agency
EO—Executive Order
FMEA—Failure Mode and Effect Analysis
FR—**Federal Register**
FTA—fault-tree analysis
GWP—Global warming potential
HCFC-22—the chemical chlorodifluoromethane, CAS Reg No. 75–45–6
HCFC-142b—the chemical 1-chloro-1,1-difluoroethane, CAS Reg No. 75–68–3
HFC—hydrofluorocarbon
HFC-134a—the chemical 1,1,1,2-tetrafluoroethane, CAS Reg. No. 811–97–2
HFC-152a—the chemical 1,1-difluoroethane, CAS Reg. No. 75–37–6
HFO—hydrofluoroolefin
HFO-1234yf—the chemical 2,3,3,3-tetrafluoroprop-1-ene, CAS Reg. No. 754–12–1
IDLH—Immediately Dangerous to Life and Health
MVAC—motor vehicle air conditioning
NIOSH—National Institute for Occupational Safety and Health
NODA—Announcement of Data Availability, formerly known as Notice of Data Availability
NPRM—Notice of Proposed Rulemaking
NTTAA—National Technology Transfer and Advancement Act
ODP—ozone depletion potential
ODS—ozone-depleting substance
OEM—original equipment manufacturer
OMB—the United States Office of Management and Budget
OSHA—the United States Occupational Safety and Health Administration
PEL—Permissible Exposure Level
ppm—parts per million
RDECOM—U.S. Army Research, Development and Engineering Command
REL—Recommended Exposure Level
RFA—Regulatory Flexibility Act
SAE—SAE International, formerly the Society of Automotive Engineers
SAE CRP—SAE Cooperative Research Program
SBREFA—Small Business Regulatory Enforcement Fairness Act
SNAP—Significant New Alternatives Policy
STEL—Short Term Exposure Limit
TWA—Time Weighted Average
UMRA—Unfunded Mandates Reform Act

III. How does the SNAP program work?

A. What are the statutory requirements and authority for the SNAP program?

Section 612 of the Clean Air Act (CAA) requires U.S. Environmental Protection Agency (EPA) to develop a program for evaluating alternatives to ozone-depleting substances (ODS). EPA refers to this program as the Significant New Alternatives Policy (SNAP) program. The major provisions of section 612 are:

1. Rulemaking

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

2. 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 is

[2] Chemical Abstracts Service [CAS] Registry: No. 124–38–9.

[3] This final action applies only to air conditioning systems in motor vehicles consistent with the definition of light duty vehicles and heavy-duty vehicles under 40 CFR 86.1803–01, with the exception of passenger busses.

found at *http://www.epa.gov/ozone/snap/lists/index.html* and the lists of ''unacceptable,'' ''acceptable subject to use conditions,'' and ''acceptable subject to narrowed use limits'' substitutes are found in the appendices to 40 CFR part 82 subpart G.

3. Petition Process

Section 612(d) grants the right to any person to petition EPA to add a substance, add or delete use restrictions, 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.

4. 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.

5. 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.

6. 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. What are EPA's regulations implementing section 612 of the Clean Air Act?

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 comprise the principal industrial sectors that historically consumed the largest volumes of ODS.

Section 612 of the CAA requires EPA to list as acceptable those substitutes that do not present a significantly greater risk to human health and the environment as compared with other substitutes that are currently or potentially available.

C. How do the regulations for the SNAP program work?

Under the SNAP regulations, anyone who produces a substitute to replace a class I or II ODS in one of the eight major industrial use sectors must provide notice to the Agency, including health and safety information on the substitute at least 90 days before introducing it into interstate commerce for significant new use as an alternative. 40 CFR 82.176(a). This requirement applies to the person planning to introduce the substitute into interstate commerce,[4] typically chemical manufacturers, but may also include importers, formulators, equipment manufacturers, or end-users[5] when they are responsible for introducing a substitute into commerce. The 90-day SNAP review process begins once EPA receives the submission and determines that the submission includes complete and adequate data. 40 CFR 82.180(a). The CAA and the SNAP regulations, 40 CFR 82.174(a), prohibit use of a substitute earlier than 90 days after notice has been provided to the Agency.

The Agency has identified four possible decision categories for substitutes: acceptable; acceptable subject to use conditions; acceptable subject to narrowed use limits; and unacceptable.[6] 40 CFR 82.180(b).Use conditions and narrowed use limits are both considered ''use restrictions'' and are explained below. Substitutes that are deemed acceptable with no use restrictions (no use conditions or narrowed use limits) can be used for all applications within the relevant end-uses within the sector. Substitutes that are acceptable subject to use restrictions may be used only in accordance with those restrictions.

After reviewing a substitute, the Agency may determine that a substitute is acceptable only if certain conditions in the way that the substitute is used are met to minimize risks to human health and the environment. EPA describes such substitutes as ''acceptable subject to use conditions.'' Entities that use these substitutes without meeting the associated use conditions are in violation of section 612 of the Clean Air Act and EPA's SNAP regulations. 40 CF 82.174(c).

For some substitutes, the Agency may permit a narrow range of use within an end-use or sector. For example, the Agency may limit the use of a substitute to certain end-uses or specific applications within an industry sector. The Agency requires a user of a narrowed use substitute to demonstrate that no other acceptable substitutes are available for their specific application by conducting comprehensive studies. EPA describes these substitutes as ''acceptable subject to narrowed use limits.'' A person using a substitute that is acceptable subject to narrowed use limits in applications and end-uses that are not consistent with the narrowed use limit is using these substitutes in an unacceptable manner and is in violation of section 612 of the CAA and EPA's SNAP regulations. 40 CFR 82.174(c).

The Agency publishes its SNAP program decisions in the **Federal Register** (FR). EPA publishes decisions concerning substitutes that are deemed acceptable subject to use restrictions (use conditions and/or narrowed use limits), or for substitutes deemed unacceptable, as proposed rulemakings to allow the public opportunity to comment, before publishing final decisions.

In contrast, EPA publishes substitutes that are deemed acceptable with no restrictions in ''notices of acceptability,'' rather than as proposed and final rules. As described in the preamble to the rule initially implementing the SNAP program (59 FR 13044; March 18, 1994), EPA does not believe that rulemaking procedures are necessary to list alternatives that are acceptable without restrictions because such listings neither impose any sanction nor prevent anyone from using a substitute.

Many SNAP listings include ''comments'' or ''further information'' to provide additional information on substitutes. Since this additional information is not part of the regulatory

[4] As defined at 40 CFR 82.104 ''interstate commerce'' means the distribution or transportation of any product between one state, territory, possession or the District of Columbia, and another state, territory, possession or the District of Columbia, or the sale, use or manufacture of any product in more than one state, territory, possession or District of Columbia. The entry points for which a product is introduced into interstate commerce are the release of a product from the facility in which the product was manufactured, the entry into a warehouse from which the domestic manufacturer releases the product for sale or distribution, and at the site of United States Customs clearance.

[5] As defined at 40 CFR 82.172 ''end-use'' means processes or classes of specific applications within major industrial sectors where a substitute is used to replace an ozone-depleting substance.

[6] The SNAP regulations also include ''pending,'' referring to submissions for which EPA has not reached a determination, under this provision.

decision, these statements are not binding for use of the substitute under the SNAP program. However, regulatory requirements so listed are binding under other regulatory programs. The ''further information'' classification does not necessarily include all other legal obligations pertaining to the use of the substitute. While the items listed are not legally binding under the SNAP program, EPA encourages users of substitutes to apply all statements in the ''further information'' column in their use of these substitutes. In many instances, the information simply refers to sound operating practices that have already been identified in existing industry and/or building-codes or standards. Thus, many of the statements, if adopted, would not require the affected user to make significant changes in existing operating practices.

D. Where can I get additional information about the SNAP program?

For copies of the comprehensive SNAP lists of substitutes or additional information on SNAP, refer to EPA's Ozone Depletion Web site at *www.epa.gov/ozone/snap/index.html.* 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 March 18, 1994 (59 FR 13044), codified at 40 CFR part 82, subpart G. A complete chronology of SNAP decisions and the appropriate citations are found at *http://www.epa.gov/ozone/snap/chron.html.*

IV. What is EPA's final decision for CO_2 as an alternative for MVAC?

In this final rule, EPA is modifying its previous determination that listed CO_2 as an acceptable substitute for CFC–12 in new MVAC systems (59 FR 13044; March 18, 1994) and is listing CO_2 acceptable, subject to use conditions, as a substitute for CFC–12 in new MVAC systems. This final action does not apply to the use of CO_2 as a conversion or retrofit for existing MVAC systems. In addition, it does not apply to the use of CO_2 in the air conditioning or refrigeration systems of buses, trains, rail or subway cars, or appliances such as refrigerated transport. This refrigerant may be used only in equipment designed specifically and clearly identified for this refrigerant (i.e., it may not be used as a conversion or ''retrofit'' refrigerant for existing equipment). EPA is not mandating the use of CO_2 or any other alternative to ODS in MVAC systems. Vehicle manufacturers have the option of using any refrigerant listed as acceptable for this end-use, so long as they meet the applicable use conditions. This action removes CO_2 from the list of acceptable substitutes for MVAC systems and instead lists it as acceptable subject to the following use conditions:

1. Engineering strategies and/or mitigation devices shall be incorporated such that in the event of refrigerant leaks the resulting CO_2 concentrations do not exceed:

• The short term exposure level (STEL) of 3% or 30,000 ppm averaged over 15 minutes in the passenger free space; and

• The ceiling limit of 4% or 40,000 ppm in the passenger breathing zone.

2. Vehicle manufacturers (i.e., original equipment manufacturers [OEMs]) must keep records of the tests performed for a minimum period of three years demonstrating that CO_2 refrigerant levels do not exceed the STEL of 3% averaged over 15 minutes in the passenger free space, and the ceiling limit of 4% in the breathing zone.

3. The use of CO_2 in MVAC systems must adhere to the standard conditions identified in SAE[7] Standard J639 (2011 version) including:

• Installation of a high pressure system warning label;

• Installation of a compressor cut-off switch;[8] and

• Use of unique fittings with:

i. Outside diameter of 16.6 +0/−0.2 mm (0.6535 +0/−0.0078 inches) for the MVAC low-side service port;

ii. Outside diameter of 18.1 +0/−0.2 mm (0.7126 +0/−0.0078 inches) for the MVAC high-side service port; and

iii. Outside diameter of 20.955 +0/−0.127 mm (0.825 +0/−0.005 inches) and right-hand thread direction for CO_2 refrigerant service containers.[9]

To help ensure that the first use condition is met, we are including several recommendations in the listing decision. First, OEMs should conduct and keep on file Failure Mode and Effect Analysis (FMEA) on the MVAC as stated in SAE J1739 (Potential Failure Mode and Effects Analysis in Design [Design FMEA], Potential Failure Mode and Effect Analysis in Manufacturing and Assembly Process [Process FMEA]), or equivalent. Second, OEMs should factor in background CO_2 concentrations that come about from normal respiration by the maximum number of vehicle occupants.[10] Third, EPA recommends the use of the following industry standards as additional references when locating the driver's and passengers' breathing zone consistent with the head and seating position, measuring refrigerant concentrations at different locations inside the passenger compartment including the breathing zone, and addressing risks associated with MVAC use:

• *SAE J1052*—Motor Vehicle Driver and Passenger Head Position;

• *SAE J2772*—Measurement of Passenger Compartment Refrigerant Concentrations under System Refrigerant Leakage Conditions; and

• *SAE J2773*—Standard for Refrigerant Risk Analysis for Mobile Air Conditioning Systems.

Fourth, EPA recommends additional training for MVAC service technicians that will service MVAC systems using CO_2 as the refrigerant.

V. Why is EPA establishing these final use conditions for the use of CO_2 in new MVAC?

Summary of SNAP Actions on the Use of CO_2 as a Refrigerant in MVAC

In the initial SNAP rulemaking issued on March 18, 1994 (59 FR 13044), EPA found CO_2 acceptable as a substitute for CFC-12 in new MVAC systems. In that final rule, EPA also found other substitutes (i.e., HFC–134a and R–401C, evaporative cooling and stirring cycle) acceptable for use in new MVAC systems. On June 13, 1995 (60 FR 31092) and October 16, 1996 (61 FR 54040) EPA took two separate actions requiring the use of unique fittings for several refrigerants then currently listed as acceptable for use in new MVAC systems (60 FR 31092) and for refrigerants subsequently found acceptable for use in MVAC (61 FR 54040). The use conditions requiring unique fittings were codified at 40 CFR Part 82, Subpart G, Appendix D. None of these actions applied to CO_2. However, in the preamble to the October 16, 1996 SNAP rule, EPA stated that for any decision made under SNAP, the Agency may, on its own, determine that additional conditions or restrictions should be added or removed through future rulemaking (61 FR 54032). Also, EPA stated in the October 16, 1996 SNAP rule that due concerns about potential cross-contamination as a result of the large number of MVAC refrigerants, the Agency may choose to list a substitute as acceptable subject to

[7] SAE International, formerly the Society of Automotive Engineers.

[8] A compressor cut-off switch causes a device to stop compressor operation before activation of any pressure relief device.

[9] The refrigerant service containers fitting requirement applies only to refrigerant service containers used during servicing of the MVAC, in accordance with the provisions established for MVAC servicing under 40 CFR part 82, subpart B.

[10] Maximum number of vehicle occupants includes the maximum number of passengers in a normal seating position inside the passenger compartment. This may vary between vehicle types.

use the conditions listed (in that rule, i.e., use of unique fittings) while proceeding with notice-and-comment rulemaking to impose other restrictions (61 FR 54034).

Although the initial SNAP rulemaking listed CO_2 as acceptable for use in new MVAC systems, at that time, EPA was not aware of any interest in using CO_2 in MVAC systems and did not receive any submission for unique fittings to be used on CO_2 MVAC systems or any information specified in 40 CFR Part 82, Subpart G, Appendix D. EPA was subsequently made aware through risk screens of concerns regarding health risks to exposure of CO_2 from refrigerant leaks into the passenger compartment (EPA–HQ–OAR–2004–0488–0025.2). EPA was also made aware of potential interest in using CO_2 as a refrigerant for MVAC systems and of technology being developed (71 FR 55141; September 21, 2006). On September 21, 2006, we issued a Notice of Proposed Rulemaking (referred to hereinafter as ''the proposal'' or NPRM) proposing to find CO_2 acceptable as a substitute for CFC–12 in new MVAC systems, subject to the use conditions specified at 40 CFR part 82, subpart G, appendix D (71 FR 55140). In addition, due to concerns regarding the possibility of driver performance decrement and adverse effects on passengers if exposed to concentrations of CO_2 above 3% during a short period of time (e.g., 15 minutes), we proposed use conditions restricting CO_2 refrigerant concentrations to a STEL of 3% averaged over 15 minutes in the passenger free space caused by leaks from the MVAC.[11] Subsequently, on September 17, 2009 (74 FR 47774), EPA issued a notice of data availability (NODA) making available to the public additional information received supporting a ceiling limit of 4% CO_2 as a level that should not be exceeded for any period of time due to possible adverse health effects. We also requested public comment on whether EPA should include in a final rule, listing CO_2 as acceptable subject to use conditions for new MVAC systems, a ceiling limit of 4% CO_2 in addition to the proposed STEL of 3% averaged over 15 minutes inside the passenger compartment, and whether the proposed use conditions should apply when the ignition is off.

Basis for Use Conditions Included in This Final Rule

EPA proposed three use conditions in the NPRM. One use condition required that systems be designed to avoid occupant exposure to CO_2 concentrations above a STEL of 3% CO_2 averaged over 15 minutes in the passenger free space, during the event of a leak. The passenger free space is the space inside the passenger compartment excluding the space enclosed by the ducting in the HVAC module (71 FR 55149). The proposal also stated that a breathing zone ceiling limit may provide additional assurance regarding vehicle driver alertness and requested comment on whether a maximum limit should be applied in the driver and passenger breathing zone, in addition to the 3% CO_2 free space limit averaged over 15 minutes. In the NODA, we defined the breathing zone as the space where people breathe (74 FR 47775), and data received during the public comment period defined this zone as the area inside the passenger compartment where the driver's and passengers' heads are located during a normal sitting position.[12]

The other proposed use conditions required OEMs to: (1) Keep records of the test performed to ensure that MVAC systems are safe and designed with sufficient safety mitigation devices so that occupants are not exposed to levels above the CO_2 STEL; and (2) adhere to all the safety requirements listed in the SAE Standard J639, in addition to the use conditions already established under Appendix D to Subpart G of 40 CFR part 82, for MVAC substitutes: unique fittings,[13] label, and a compressor cut-off switch.

We received a number of public comments on the proposed use conditions and subsequent data announced in the NODA regarding the 4% CO_2 ceiling limit. Some commenters claimed that the proposed STEL of 3% CO_2 averaged over 15 minutes was enough to protect passengers and ensure driver alertness (EPA–HQ–OAR–2004–0448–0025.1, –0032, –0044). Other commenters stated that there are sufficient arguments for choosing percent concentration limits higher than the proposed STEL of 3% CO_2 averaged over 15 minutes (EPA–HQ–OAR–2004–0448–0043, –0049). Alternatively, some commenters requested a maximum CO_2 ceiling limit in the passenger breathing zone (EPA–HQ–OAR–2004–0448–0030, –0035, –0047.1) and one commenter considered appropriate the 4% CO_2 ceiling limit as an additional use condition (EPA–HQ–OAR–2004–0448–0047.1).

After considering the information in the docket at the time of proposal, comments received on the proposed rule, and additional information we have received in response to the NODA, we have decided to finalize the use conditions as proposed in the September 21, 2006, NPRM, and to add a ceiling limit of 4% CO_2, which would apply in addition to the 3% averaged over 15-minute CO_2 STEL. We believe that requiring a CO_2 ceiling limit is necessary because it is possible for a time-weighted average concentration, such as the STEL, to be under 3%, while peak concentrations could reach higher limits resulting in possible hearing and vision effects that could distract and endanger a driver, or cause other, potentially more severe adverse health effects (EPA–HQ–OAR–2004–0488–0041). Thus, the proposed use condition requiring mitigation strategies for MVAC systems, to prevent leaks of CO_2 refrigerant reaching concentrations above 3% averaged over 15 minutes inside the passenger compartment free space, may not be sufficient on its own to protect drivers and passengers. This further protective limit is necessary to ensure that overall risks to human health and the environment from CO_2 will be similar to or less than those of other available refrigerants that EPA has already listed as acceptable for MVAC.

In the final rule, we also revised the proposed use condition on recordkeeping to refer to the 4% ceiling limit. The September 21, 2006 NPRM proposed requiring OEMs to keep records demonstrating they have met the use condition requiring safety mitigation devices to avoid occupant exposure above the 3% CO_2 STEL in the passenger compartment. The final use condition addressing recordkeeping requires OEMs to keep records of the tests performed for a minimum period of three years demonstrating that MVAC systems are designed incorporating engineering devices or mitigation strategies so that in the event of refrigerant leak, the resulting concentrations of CO_2 in the passenger free space do not exceed the STEL of 3% averaged over 15 minutes and do not exceed the ceiling limit of 4% in the passenger breathing zone. Keeping records of tests performed evaluating system safety is a customary practice for OEMs while vehicles are in production

[11] In the same NPRM, EPA also proposed to find HFC-152a acceptable subject to use conditions. On June 12, 2008, EPA published a final rule listing HFC-152a as an acceptable substitute, subject to use conditions, for new MVAC (73 FR 33304), but deferred final ruling on the use of CO_2 in new MVAC systems.

[12] This was the location considered in the U.S. Army risk assessment, in addition to the rest of the vehicle occupant compartment (EPA–HQ–OAR–2004–0488–0025.2)

[13] The unique fittings provision applies for MVAC service ports and containers intended for servicing of the MVAC (Appendix D to Subpart G of 40 CFR part 82, 61 FR 54040; October 16, 2006).

and for several years afterward (EPA–HQ–OAR–2004–0488–0057).

For purposes of the final rule, we are referencing to the 2011 version of SAE J639 instead of the 2005 version referenced in the proposed rule. The SAE J639 2011 version added new provisions designed specifically to address use of another refrigerant, HFO–1234yf (EPA–HQ–OAR–2004–0488–0059). The provisions under the 2011 version of SAE J639 for high pressure system warning label, compressor cut-off switch, and unique fittings, remain unchanged. Consistent with the proposed rule, the criteria for uniqueness of fittings under Appendix H to Subpart G of 40 CFR Part 82, and the provisions of Appendix D to Subpart G of 40 CFR Part 82 and SAE J639 (2011 version), in this final rule we specify that the CO_2 refrigerant fittings must have: (1) An outside diameter of 16.6 +0/−0.2 mm (0.6535 +0/−0.0078 inches) for the MVAC low-side, (2) an outside diameter of 18.1 +0/−0.2 mm (0.7126 +0/−0.0078 inches) for the MVAC high-side, and (3) an outside diameter of 20.955 +0/−0.127 mm (0.825 +0/−0.005 inches) and right-hand thread direction for refrigerant service containers.[14]

VI. Why is EPA listing CO_2 acceptable subject to use conditions?

EPA is listing CO_2 acceptable subject to use conditions because the use conditions are necessary to ensure that use of CO_2 will not present greater risk to human health and the environment than other available substitutes acceptable for use in new MVAC systems. Examples of other substitutes that EPA has already found acceptable subject to use conditions for use in new MVAC systems include HFC-152a and HFO-1234yf.[15] A list of acceptable substitutes subject to use conditions for use in new MVAC systems can be found at Appendix B to Subpart G of 40 CFR, Part 82 and *http://www.epa.gov/ozone/snap/refrigerants/lists/mvacs.html.*

EPA is requiring the use of unique fittings for CO_2 refrigerant consistent with Appendix D to Subpart G of 40 CFR part 82 (61 FR 54040; October 16, 1996). All acceptable substitutes for use in MVAC systems are subject to those use conditions (and thus are identified as acceptable subject to use conditions). For CO_2, the unique fittings that must be used for MVAC systems are those identified in the industry standard SAE J639 (2011 version).

In addition to the use conditions regarding unique fittings, EPA is requiring OEMs to adhere to all the safety requirements of SAE J639 (2011 version) for the safe design of new MVAC systems using CO_2. We are establishing this as a use condition to ensure that new MVAC systems that use CO_2 are specifically designed to minimize release of the refrigerant into the passenger cabin. Adherence to the standard will minimize the risks that CO_2 refrigerant levels in the passenger compartment and breathing zone would exceed the CO_2 limits of 3% averaged over 15 minutes in the passenger cabin free space and the 4% ceiling limit in the passenger breathing zone.

Environmental Impacts

EPA finds that CO_2 does not pose greater risk to the environment than other substitutes that are currently available in the end-use being evaluated in this rulemaking. In at least one aspect, CO_2 is significantly better for the environment than most alternatives currently listed as acceptable subject to use conditions in the MVAC end-use. CO_2 has a hundred-year time horizon (100-yr) global warming potential (GWP) of one, compared with a GWP of four for HFO-1234yf, 124 for HFC-152a, and 1,430 for HFC-134a. Further, CO_2 has an ozone depletion potential (ODP) of zero, comparable to HFO-1234yf, HFC-152a, and HFC-134a. Other SNAP-approved refrigerant blends containing HCFCs have ODPs ranging from 0.065 to 0.022. Additionally, CO_2 is excluded from the definition of volatile organic compound (VOC) under CAA regulations (*see* 40 CFR 51.100(s)).

Human Health and Safety Impacts

Carbon dioxide is not flammable, similar to HFC-134a and most other acceptable alternatives for MVACs. Therefore, it does not add risks of fire in a vehicle when used. For the MVAC end-use, the EPA has listed two flammable alternatives (HFC-152a and HFO-1234yf) acceptable, subject to use conditions to mitigate flammability risks.

CO_2 is an asphyxiant that obstructs the oxygen flow into the body (OSHA, 1996; as cited in EPA–HQ–OAR–2004–0488–0041). However, it is not the only gas that may cause asphyxia. Releasing almost any gas[16] into an unventilated or poorly ventilated space can lower the oxygen concentration to a level that poses significant health risks (EPA–HQ–OAR–2004–0488–0041). Health risks could occur to drivers or vehicle occupants during release of CO_2 refrigerant into the passenger compartment. Additionally, occupational risks could occur during the manufacture of the refrigerant, initial installation of the refrigerant into the MVAC system at the vehicle assembly plant, servicing of the MVAC system, or final disposition of the MVAC system (i.e., recycling or disposal).

We evaluated potential human health and safety impacts, including the short- and long-term toxicity of CO_2 and risk of injury to service personnel from high-pressure CO_2 MVAC systems, and considered detailed risk assessments with fault-tree analysis (FTA), (EPA–HQ–OAR–2004–0488–0017, –0022, and –0025.2), scientific data provided in public comments (EPA–HQ–OAR–2004–0488–0037.1) and other information obtained during the notice of data availability (EPA–HQ–OAR–2004–0488–0041). We also reviewed a risk assessment with fault-tree analysis from the SAE Corporate Research Program (CRP) for HFO-1234yf and CO_2, submitted during the public comment period for another SNAP rulemaking[17] (EPA–HQ–OAR–2004–0488–0051, EPA–HQ–OAR–2008–0664–0008, and –0056). We also evaluated and provided additional information on the health effects and risks to CO_2 exposure through a contractor-authored report ''Review of Health Impacts from Short-Term Carbon Dioxide Inhalation Exposures'' (EPA–HQ–OAR–2004–0488–0041). This report revealed that exposures over 4% (40,000 ppm) CO_2 are likely to cause discomfort and signs of intoxication that could impair the driver's response to road and driving conditions, and could create safety and health risks to the passengers. In addition to this report, a revised risk analysis performed by the U.S. Army Research, Development and Engineering Command (herein referred as U.S. Army risk analysis),[18] submitted during the

[14] The SAE J639 standard specifies unique fittings for high-side and low-side service ports and makes reference to SAE J2683 ''Refrigerant Purity and Container requirements for Carbon Dioxide (CO_2 R–744) Used in Mobile Air Conditioning Systems'' which specifies that the unique fitting for CO_2 refrigerant service containers must be consistent with the Cylinder Gas Association's fitting CGA 320 (for 0–3000 psi) which has an outside diameter of 0.825 +0/-0.005 inches (20.955 +0/−0.127 mm) and right-hand thread direction (EPA–HQ–OAR–2004–0488–0059, –0060).

[15] HFO-1234yf was found acceptable only for MVAC systems in new passenger cars and light duty trucks (76 FR 17488, March 29, 2011).

[16] Any refrigerant can act as an asphyxiant by limiting available oxygen in a space. When oxygen levels in air are reduced to 12–14% by displacement, symptoms of asphyxiation, loss of concentration, increased pulse rate and deeper respiration will occur.

[17] SNAP rule listing as acceptable subject to use conditions HFO-1234yf for MVACs in new passenger cars and light-duty vehicles (76 FR 17488, March 29, 2011).

[18] Blackwell et. al 2006; *Risk Analysis for Alternative Refrigerant in Motor Vehicle Air Conditioning* (revised risk analysis made in

public comment period, indicated that limiting passenger exposure to 4% CO_2 is sufficiently protective to avoid serious or irreversible health effects in potentially sensitive subpopulations (EPA–HQ–OAR–2004–0488–0025.2). Also, the U.S. Army risk analysis selected the 4% CO_2 level based on the lowest level at which performance decrements were observed in studies by Wong, 1992 (EPA–HQ–OAR–2004–0488–0025.2).

Vehicle Driver and Passenger Risks

EPA's review of vehicle driver and passenger risks from CO_2 refrigerant exposure indicated that a potential refrigerant leak into the vehicle passenger compartment is not expected to present an unreasonable exposure risk if engineering strategies or mitigation strategies are applied (EPA–HQ–OAR–2004–0488–0025, –0037.1). The U.S. Army risk assessment indicated a possible strategy to limit refrigerant leakage into the passenger compartment by installing a device referred as a ''3-second squib valve'' to discharge refrigerant to a location outside the passenger compartment three seconds after a major leak is detected.[19] The assessment showed that for CO_2 MVAC systems, using a squib valve to evacuate the charge in three seconds after a leak is detected kept passenger exposure to below levels of concern (i.e., 3% over 15 minutes in the passenger compartment, as a whole, and 4% in the breathing zone).We listed in the proposal additional possible mitigation strategies that may reduce the likelihood of exceeding refrigerant levels of concern inside the passenger compartment, including within the breathing zone. We also received information from commenters on additional engineering strategies and mitigation strategies (EPA–HQ–OAR–2004–0488–0037.1, –0025.2, –0030, –0050). In this final rule, we are not establishing a use condition requiring a specific mitigation strategy, but instead leaving to vehicle manufacturers the choice of which mitigation strategy to use in order to ensure that in the event of refrigerant leak, the resulting concentrations of CO_2 in the passenger free space above 3% or 30,000 ppm averaged over 15 minutes are avoided and the resulting concentrations of CO_2 in the passenger breathing zone do not exceed the ceiling limit of 4% or 40,000 ppm at any time.

Occupational Risks

EPA evaluated risks of injury and refrigerant exposure to workers by examining risk screens, published research information and data made available during the public comment period (EPA–HQ–OAR–2004–0017, –0025.2, –0041, –0022, –0015, –0051). We compared long-term occupational exposures to CO_2 to a workplace exposure limit of 5,000 ppm (or 0.5%) time weighted average CO_2 concentration over a period of eight hours, consistent with the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit-Time Weighted Average (PEL–TWA),[20] the Centers for Disease Control and Prevention's (CDC's) National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit-Time Weighted Average (REL–TWA),[21] and the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value-Time Weighted Average (TLV–TWA).[22] [23] Additionally, we compared short-term occupational worker exposures to CO_2 to a workplace short-term exposure limit of 30,000 ppm (or 3%) time weighted average CO_2 concentration over a 15-minute period during a workday, consistent with NIOSH's Recommended Exposure Limit-Short term Exposure Limit (REL–STEL) [24] and ACGIH's Threshold Limit Value-Short Term Exposure Limit (TLV–STEL).[25] [26]

The U.S. Army risk assessment (EPA–HQ–OAR–2004–0488–0025.2) evaluated occupational risks for the MVAC service sector using FTA. The FTA found probabilities of refrigerant exposure while servicing CO_2 MVAC systems of approximately 10^{-5} cases per year (i.e., approximately 5 annual cases per 100,000 technicians) (EPA–HQ–OAR–2004–0488–0025). This figure is significantly lower when compared to the general injury and illness rate for auto repair technicians, which is approximately 4 annual cases per 100 full time technicians (BLS, 2003; EPA–HQ–OAR–2004–0488–0025); thus risks from CO_2 exposures in the MVAC service field are expected to be significantly less than the risks of injury already present in shops (EPA–HQ–OAR–2004–0488–0025). The U.S. Army risk assessment additionally found that the chances of refrigerant exposure for persons servicing an MVAC system do not vary considerably by the type of refrigerant used and found similar results for end-of-life (i.e., recycling or disposal) activities (EPA–HQ–OAR–2004–0488–0025).

EPA notes that occupational risks could occur during the manufacture of the refrigerant and initial installation of the refrigerant into the MVAC system at the vehicle assembly plant. Although we did not analyze the risk of exposure during refrigerant manufacture and initial installation of CO_2 refrigerant into the MVAC system at the vehicle assembly plant, we expect risks at the vehicle assembly plant, and at other workplaces were CO_2 refrigerant handling will occur (e.g., service shops, and recycling or disposal facilities), to be similar to or lower than the risks from other refrigerants used for these purposes due to occupational safety practices (e.g., proper ventilation, use of personal protective equipment) established for these type of facilities and subject to occupational safety and health standards under 29 CFR Part 1910, which are intended to address risk to such workers.

Overall Conclusion

EPA finds that the overall environmental and human health risks posed by the use of CO_2 in new MVAC systems, subject to the use conditions being adopted in this final rule, is lower than or comparable to the risks posed by other substitutes found acceptable subject to use conditions in the same end-use.

VII. What is the relationship between this SNAP rule and other EPA rules?

Rules Under Sections 609 and 608 of the Clean Air Act

This final SNAP rule addresses the conditions for safe use of CO_2 in new MVAC systems. Thus, the requirements in this rule apply primarily to OEMs, except for specific requirements for unique fittings required under Appendix D to Subpart G of 40 CFR part 82 which also applies for servicing of

collaboration with EPA and several stakeholders, EPA–HQ–OAR–2004–0488–0025.2). The original risk screen referred in the NRPM (71 FR 55140) contained technical errors (EPA–HQ–OAR–2004–0488–0017). This final rule relies on the results of the revised U.S. Army risk analysis.

[19] Refers to the assessment by Blackwell, et al., 2006 (EPA–HQ–OAR–2004–0488–0025).

[20] PELs are based on an eight hour TWA exposure (OSHA, 1988a).

[21] REL–TWAs are concentrations for up to 10-hour workday during a 40-hour workweek (NIOSH, 2005).

[22] TLV–TWAs are concentrations for an eight hour workday and a 40-hour workweek, to which is believed that nearly all workers may be repeatedly exposed, day after day, for a working lifetime without adverse effect (ACGIH, 2005).

[23] OSHA's PEL–TWA, NIOSH's REL–TWA, and ACGIH'S TLV–TWA are all the same, 5,000 ppm (0.5%), for CO_2 (EPA–HQ–OAR–2004–0488–0041).

[24] REL–STELs are 15-minute TWA exposure limits that should not be exceeded at any time during a workday (NIOSH, 2005).

[25] TLV–STELs are 15-minute exposure that should not be exceeded at any time during a workday, even if the eight hour TWA is within the TLV–TWA (ACGIH, 2005).

[26] NIOSH's REL–STEL, and ACGIH'S TLV–STEL for CO_2 are all 30,000 ppm (3%) 15-minute TWA (EPA–HQ–OAR–2004–0488–0041).

the MVAC. Section 609 of the CAA establishes standards and requirements regarding servicing of MVAC systems. These requirements include training and certification of any person that services MVAC systems for consideration,[27] as well as standards for certification of equipment for refrigerant recovery and recycling. EPA has issued regulations implementing these statutory requirements and those regulations are codified at subpart B of 40 CFR part 82. MVAC end-of-life disposal and recycling specifications are covered under section 608 of the CAA and our regulations are codified at subpart F of 40 CFR part 82. The statutory and regulatory provisions regarding MVAC servicing, refrigerant recovery, and refrigerant venting prohibition apply to any refrigerant alternative and are not limited to refrigerants that are also ODS. CO_2 is exempted from the refrigerant venting prohibition provisions promulgated under CAA 608 (40 CFR 82.154 and 70 FR 19278; April 13, 2005).

VIII. What is EPA's response to public comments on the proposal?

This section summarizes EPA's response to significant comments received during the public comment periods for the NPRM and the NODA. EPA's response to all comments received can also be found in a response to comments document in docket EPA–HQ–OAR–2004–0488.

A. Use Conditions

Comment: Some commenters claimed that the proposed STEL of 3% CO_2 averaged over 15 minutes in the cabin free space is enough to protect passengers and ensure driver alertness. One commenter suggested to consider a 3% CO_2 concentration limit averaged over 15 minutes in the breath level (i.e., breathing zone) instead of 3% in the cabin free space. The commenter considered the breathing zone to be a relevant point for measurement and claimed that high refrigerant concentrations lower in the vehicle would not impair vehicle operation. Other commenters supported higher CO_2 concentration limits but over a shorter period of time (e.g., 5.5% CO_2 for 5 minutes and 9% CO_2 as a ceiling limit). Other commenters requested that EPA include a CO_2 ceiling limit in the passenger breathing zone and one commenter considered appropriate a 4% CO_2 ceiling limit (i.e., a limit not to be exceeded at any time) as an additional use condition. Another commenter stated that use conditions requiring mitigation strategies are not necessary for low probability events (i.e., exceeding 4% CO_2 for any duration) and that requiring such conditions would prevent the use of this refrigerant.

Response: After evaluating the comments and risk screens (EPA–HQ–OAR–2004–0488–0025.2, –0041, 0051), EPA is revising the proposed use conditions to add a ceiling limit of 4% CO_2, in addition to the CO_2 STEL of 3% averaged over 15 minutes. We believe that the original proposed use condition requiring mitigation strategies for MVAC systems, to prevent leaks of CO_2 refrigerant reaching concentrations above 3% averaged over 15 minutes inside the passenger compartment free space, may not be sufficient on its own to protect drivers and passengers. We also believe that requiring a CO_2 ceiling limit of 4% is necessary because it is possible for a time-weighted average concentration, such as the STEL, to be under 3%, while peak concentrations could reach higher limits for a few minutes. As shown in published data, CO_2 concentration peaks above 4% could result in effects on hearing and vision that could distract and endanger a driver, or other, potentially more severe adverse health effects (EPA–HQ–OAR–2004–0488–0041).

CFD modeling showed that during unmitigated refrigerant leak scenarios, CO_2 refrigerant concentrations in the passenger breathing zone can reach up to 10.2% in 50 seconds (0.83 minutes) and 8.0% in 200 seconds (3.33 minutes) (EPA–HQ–OAR–2004–0488–0025.2). The U.S. Army risk analysis's FTA showed that unmitigated leak scenario occurrences for CO_2 systems (reaching concentrations above 4% CO_2) could reach 4,300 per year for the vehicle fleet (EPA–HQ–OAR–2004–0488–0025.2). These occurrences are about 10,000 higher than the expected occurrences associated with leaks of a fluorinated refrigerant (e.g., HFC-134a, HFC-152a, or HFO-1234yf) breakdown product (i.e., hydrogen fluoride) exposure above health based limits.[28] Several studies reported that exposure ranging from 7% to 10% CO_2 for few minutes (e.g., 2–3 minutes) resulted in loss of consciousness (EPA–HQ–OAR–2004–0488–0441).[29]

EPA disagrees with the commenter stating that use conditions requiring mitigation strategies are not necessary for low probability events and that requiring such conditions would prevent the use of this refrigerant. Consistent with the information above, we believe that unmitigated exposure occurrences are not rare. We believe the use conditions required in this final rule are necessary to ensure that overall risks to human health and the environment from CO_2 will be similar to or less than those of other available refrigerants that EPA has already listed as acceptable for MVAC. We also believe that requiring the use conditions listed in this final rule would not make the refrigerant use less practicable. Use conditions imposed on other acceptable alternatives for MVACs (e.g., adherence to all safety requirements under SAE standard J639, use of unique fittings and labels, use of pressure relief devices) has not prevented use of such alternatives.[30]

Comment: Several commenters indicated that concentration measurements of CO_2 inside the passenger compartment should consider passenger respiration in addition to a refrigerant leak from the A/C system. Another commenter indicated that the MVAC recirculation mode operates with at least 1% of fresh air. One commenter suggested changing the text of the proposed use condition indicating the STEL for CO_2 refrigerant inside the passenger compartment to state that the STEL is ''3% v/v fully-occupied-volume, time averaged over 15 minutes'' and to clarify that the calculation of such value is based on a double average consisting of the average CO_2 concentration over the air volume of a fully occupied car and a time-average of

[27] Service for consideration means receiving something of worth or value to perform service, whether in money, credit, goods, or services (*see* 40 CFR 82.32 (g)).

[28] The risk due to exposure to HF when using HFO-1234yf is approximately the same as that with the current use of HFC-134a (on order of 10^{-12} occurrences per operating hour, or one in one trillion). (76 FR 17488; March 29, 2011). When this factor is multiplied by the approximate vehicle fleet and annual vehicle operating hours (250 million and 500 hr/yr, respectively) the occurrences per year are in the order of 10^{-1}.

[29] Unconsciousness caused by short term exposure (e.g., 2–3 minutes) of CO_2 concentration ranging from 7 to 10% was reported in studies by Aero Medical Association (1953), Flury and Zernik (1931), Hunter (1975), Schaefer (1951), and NIOSH (1996), as cited in *Review of Health Impacts for Short-Term Carbon Dioxide Inhalation Exposures* (2009). EPA–HQ–OAR–2004–0488–0041.

[30] On March 29, 2011, EPA issued a final rule listing HFO-1234yf as acceptable subject to use conditions for MVACs in new passenger car and light duty trucks. One of the use conditions in that rule require OEMs to perform and keep on file an FMEA. In an FMEA vehicle designers analyze all the ways in which parts of the MVAC system could fail and identify how they will address those risks in design of the system. (76 FR 17488). If the FMEA reports that mitigation strategies are necessary in the MVAC for safety reasons, manufacturers are required to design safety components (e.g., mitigation strategies) to comply with the use condition of that rule. In the U.S. an OEM publicly announced that it will be using HFO-1234yf in some vehicles starting 2013 model year (EPA–HQ–OAR–2004–0488–0062).

volume-average over 15 minutes.[31] Another commenter suggested alternative language for the use condition specifying a ceiling limit of 4% CO_2 applicable in any part of the free space inside the passenger compartment for a time period of 60 seconds when the car ignition is on. The suggested language reads:

''Engineering strategies and/or devices shall be incorporated into the system such that foreseeable leaks into the passenger compartment do not result in R744 concentrations of 4.0% v/v or above in any part of the free space inside the passenger compartment for more than 60 seconds when the car ignition is on.''

Response: EPA notes that the U.S. Army risk analysis assumed that a maximum number of passengers were in the vehicle before the release of refrigerant into the passenger compartment, allowing for some build-up of respiratory CO_2 (EPA–HQ–OAR–2004–0488–0025.2). Thus, that analysis recognized that CO_2 concentrations can occur from human respiration in a space with limited exchange of outside air and may consequently build up in the passenger cabin. For that reason, in the proposal, we indicated that OEMs should account for background CO_2 concentrations in the passenger compartment that can result from human respiration when designing their systems and mitigation devices (71 FR 55140; September 21, 2006). However, we did not specify whether the vehicle should be fully occupied to account for CO_2 background concentrations. We believe that CO_2 refrigerant concentrations may reach levels of concern (i.e., above 4% CO_2) during an unmitigated event of refrigerant leak either when the vehicle is fully occupied or when not fully occupied (e.g., the vehicle is occupied by the driver only). Thus we do not agree with the commenter's suggestion to state that the STEL is ''3% v/v fully-occupied-volume, time averaged over 15 minutes''. In this final rule, we recommend but do not require, consistent with the NPRM, to account for background CO_2 concentrations from human respiration, in addition to refrigerant leaks when designing the MVAC.

EPA notes that the proposal (79 FR 55140; September 21, 2006) specifies the CO_2 STEL as a concentration limit averaged over 15 minutes, in the event of a refrigerant leak. The STEL is determined from the sum of concentration and exposure time products (e.g., concentration 1 times exposure time 1 plus concentration 2 times exposure time 2), divided by the total exposure time which shall not exceed 15 minutes (EPA–HQ–OAR–2004–0448–0041). Thus the STEL is a time-weighted average concentration and not necessarily a time-average of a volume-average as indicated by the commenter since STEL refers to a total exposure time (i.e., 15 minutes) and not an average time. For this reason, we do not agree with the commenter's suggestion to clarify that the calculation of the 3% STEL is based on a double average consisting of the average CO_2 concentration over the air volume of a fully occupied car and a time-average of volume-average over 15 minutes since the approach does not provide further clarity of the use condition. In this final rule, the CO_2 STEL of 3% averaged over 15 minutes considers the average CO_2 concentration in a passenger cabin over a total time period of 15 minutes during the event of refrigerant leak; and the ceiling limit of 4% CO_2 considers the total CO_2 in the passenger breathing zone at any one moment in a passenger compartment during the event of a leak.

Regarding the alternative language suggested by the other commenter specifying a ceiling limit of 4% CO_2 applicable in any part of the free space inside the passenger compartment for a time period of 60 seconds when the car ignition is on, we note that the commenter did not provided information supporting his suggestion that the ceiling limit apply in areas other than the passenger breathing zone for the specified 60-second time period.

Comment: Two commenters indicated the need for clarity on whether the use conditions apply when the ignition is off as well as when the ignition is on. Other commenters suggested considering the results of a risk assessment performed by SAE's CRP indicating a significantly low probability for a leak when the ignition is off, and several other commenters stated that the use conditions should only apply when the ignition is on.

Response: The NODA provided data and requested additional comment on whether the use conditions should apply when the engine is off. In December, 2009, after the public comment period closed on the NODA, SAE issued a report, ''Risk Assessment for HFO-1234yf and R-744 (CO_2) Phase III'' (referred herein after as SAE CRP report), that evaluated toxicity effects and quantitative risks of CO_2, similarly to the U.S. Army risk analysis. This report was submitted to EPA during the public comment period for another SNAP rulemaking.[32] The report evaluates CO_2 exposure estimations due to leaks into the passenger compartment during different modeled scenarios such as different MVAC operation mode, system failure, and during a collision (EPA–HQ–OAR–2008–0664–0056.2, EPA–HQ–OAR–2004–0488–0025.2, –0051). The SAE CRP report also evaluated refrigerant release into the passenger compartment during a scenario where the engine is expected to be off (EPA–HQ–OAR–2004–0488–0051, EPA–HQ–OAR–2008–0664–0056.2). For this scenario, which involves passengers sleeping inside a vehicle with the windows closed while refrigerant leaks occur, the SAE CRP report showed a probability for occurrences of CO_2 refrigerant exposure above 6% (a threshold limit used by the CRP for this scenario) to be in the order of 10^{-12} per vehicle/hour/occupant (EPA–HQ–OAR–2004–0488–0051, EPA–HQ–OAR–2008–0664–0056.2). We believe that exposures of concern inside the passenger compartment are more likely to result from a large, sudden release of refrigerant inside the passenger compartment and that such a situation is most likely during a collision while the ignition is on, as described on the U.S. Army risk analysis (EPA–HQ–OAR–2004–0488–0025.2) and consistent with the SAE CRP report (EPA–HQ–OAR–2004–0488–0051, EPA–HQ–OAR–2008–0664–0056.2). In addition, even if a rupture on the evaporator line is large, the overall leak rate is limited to the maximum flow rate of refrigerant through the fixed orifice tube opening of the MVAC (EPA–HQ–OAR–2004–0488–0025.2). The maximum flow rate is determined by the differential compressor discharge pressure, which is only available when the vehicle ignition is on and MVAC system is running. Therefore, EPA finds that the overall risks to human health and the environment from CO_2 will be similar to or less than those of other available refrigerants that EPA has already listed as acceptable for MVAC when the ignition is off. Thus, consistent with a SNAP rule issued in June 12, 2008 (73 FR 33304) listing HFC-152a[33] as acceptable subject to use conditions for use in new MVAC systems, the use

[31] Fully occupied is defined as the maximum design occupancy determined by the number of sets of seat belts (EPA–HQ–OAR–2004–0488–0025.1—0025.2).

[32] We refer here to the SNAP rule listing HFO-1234yf as acceptable subject to use conditions for MVACs in new passenger cars and light duty vehicles (EPA–HQ–OAR–2008–0644, 74 FR 17488; March 29, 2011).

[33] HFC-152a poses risks comparable to CO_2 and other available refrigerants found acceptable subject to use conditions under SNAP (73 FR 33304; June 12, 2008).

conditions in this final rule apply only when the ignition is on.

Comment: One commenter suggested that the regulation should precisely define the area in the vehicle being regulated and indicated that SAE is working on a standard to establish standards for passenger compartment refrigerant concentration measurement. Another commenter indicated that a CO_2 concentration limit should focus on the driver breathing zone rather than the cabin free space.

Response: EPA has clarified the regulatory text of the use condition to define the passenger free space as the space inside the passenger compartment, excluding the space enclosed by the ducting in the HVAC module. The passenger breathing zone, where the ceiling limit of 4% must be met, is defined as the area inside the passenger compartment where the driver's and passengers' heads are located during normal sitting position (i.e., space where people breathe, as defined in the NODA (71 FR 47775; September 17, 2009)). Additionally, we note that the passenger breathing zone is defined in SAE J2772 and the driver's head position in SAE J1052. Since the automotive industry often relies on standards for designs and assessments, we recommend the use of the SAE J1052 and SAE J2772 standards as references for further specifications regarding the driver's and passengers' head and seating position and to establish the passenger breathing zone consistent with our explanation provided in Section V of the preamble (i.e., the area inside the passenger compartment where the driver's and passengers' heads are located during a normal sitting position).

EPA disagrees with the comment indicating that a CO_2 concentration limit should only focus on the driver breathing zone rather than the passenger cabin free space. Based on the risk analyses and available data, we include in this final rule a 4% ceiling limit that must not be surpassed at any time in the passenger (and driver) breathing zone (EPA–HQ–OAR–2004–0488–0044–0025.2). We also include, as proposed, a 3% CO_2 STEL averaged over 15 minutes in the passenger cabin free space as an additional protective measure for passenger exposure to CO_2. As indicated by the U.S. Army risk assessment, sensitive subpopulations (e.g., elderly and children) may be affected from exposures to high concentrations of CO_2 (EPA–HQ–OAR–2004–0488–0025.2), thus we believe it is necessary to set a limit that would address risk to all people in the passenger compartment and not solely the driver. We also take into consideration that passengers may not be in a normal sitting position all the time (e.g., passenger may rest in a reclined position) and note CO_2 is heavier than air, thus higher concentrations may be found at lower points of the passenger cabin (EPA–HQ–OAR–2004–0488–0025.2, –0041, –0051). As indicated previously, the STEL is the concentration limit that people can be exposed continuously for a short period of time (i.e., 15 minutes) without suffering adverse health risks. For these reasons we include both limits (i.e., 4% CO_2 ceiling limit in the passenger breathing zone and 3% CO_2 averaged over 15 minutes in the passenger cabin free space) in this final rule.

Comment: Several commenters suggested that a CO_2 ceiling limit should rely on exposure time since potential effects of CO_2 vary with both concentration and duration of the exposure. One commenter stated that if the ceiling limit is exceeded, it is likely due to collision events.

Response: EPA agrees the health effects of CO_2 are functions of exposures over time. The commenter appears to misunderstand what a ceiling limit is. A ceiling limit is a limit that shall not be exceeded for any period of time, thus it is not consistent with the concept of a ceiling limit to also include a period of time during which it cannot be exceeded. As explained previously, we believe that both a ceiling limit and a STEL are necessary to ensure that risks posed from CO_2 MVAC systems are not greater than risks posed by other available MVAC systems.

While EPA agrees with the commenter that collision events are the most likely cause of a refrigerant leak that could cause CO_2 levels to the exceed the ceiling limit established in the use conditions, there may be other system failures that could cause the ceiling limit to be exceeded. OEMs should consider risks from all possible events in designing MVACs for use with CO_2.

Comment: Several commenters suggested considering ceiling limits of CO_2 above 4% (e.g., 6%, 9%) based on studies showing that visual disturbances occur at concentrations of 6% CO_2. They stated that the SAE CRP report's rationale suggested a 9% CO_2 concentration ceiling limit, based on studies showing central nervous system (CNS) effects at CO_2 exposure concentrations of 10% (100,000 ppm).

Response: Studies report that human exposures to 6% CO_2 for periods as short as 2 minutes can lead to hearing and visual disturbances, and that exposures to 7.5% for 5 minutes lead to significant reasoning and performance decrements (Gellhorn, 1936; Sayers, 1987 as cited in EPA–HQ–OAR–2004–0488–0041). To provide a margin of safety, EPA considers it necessary to require a ceiling limit of 4% CO_2 in the passenger breathing zone as indicated in the NODA and suggested by some commenters, to avoid driver performance decrement and other adverse health effects on passengers.

Comment: Several commenters said that the ceiling limit should rely on NIOSH's Immediately Dangerous to Life and Health (IDLH) value of 4% CO_2 based on a 30-minute exposure.

Response: EPA disagrees with the commenters to the extent they are suggesting that the 4% limit be based on a 30-minute exposure. The NIOSH IDLH value is a worker's exposure limit based on the effects that might occur as a consequence of a 30-minute exposure (NIOSH 2005; EPA–HQ–OAR–2004–0488–0041). The OSHA regulation (1910.134(b)) defines the term as ''an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.'' We believe NIOSH's IDLH is inappropriate as a ceiling limit for the use of CO_2 as a refrigerant in MVACs because, as indicated above, a ceiling limit is a limit that shall not be exceeded for any period of time. Also, a 4% limit over 30-minutes would not protect drivers and passengers from the effects of CO_2 exposure at concentrations equal or higher than 4%. CO_2 is an asphyxiant that obstructs the oxygen flow into the body and we believe that 30-minute duration, in particular, where the person affected by such a concentration may be operating a vehicle and thus posing risk to others, creates a significant risk. *Risk Mitigation Strategies*

Comment: The U.S. Army noted a CFD parameter error in their 2005 risk analysis which used an incorrect refrigerant leak angle in their 2005 risk analysis (EPA–HQ–OAR–2004–0488–0017). The U.S. Army corrected this error for purposes of their 2006 risk analysis by using a perpendicular leak angle to the rupture cross-sectional area (EPA–HQ–OAR–2004–0488–0025.1). The 2006 analysis finds that an unmitigated discharge of CO_2, in full recirculation mode, results in CO_2 concentration above 3% for more than 60 minutes. The U.S. Army also indicated that a 3-second, rather than a 10-second squib valve, as originally determined, would be needed to ensure that CO_2 concentrations remain below the 3% on a 15-minute average inside the passenger compartment.

Response: EPA notes that the U.S. Army is commenting on its own risk assessment performed in collaboration with EPA and several stakeholders, and referenced in the NPRM (71 FR 55140). We also note that the 2005 U.S. Army risk analysis referred in the NRPM (71 FR 55140) contained technical errors (EPA–HQ–OAR–2004–0488–0017). This final rule relies on the results of the revised (2006) U.S. Army risk analysis submitted during the public comment period.

Based on the U.S. Army revised assessment, we understand that, in order for a squib valve to be an effective mitigation device, the activation time of such device should be 3 seconds rather than the 10 seconds indicated in the original risk assessment. Since we are not specifying in this final rule what mitigation strategies must be used, we believe the 2006 revised risk analysis does not affect the use conditions addressed in this final rule, but may affect the potential risk mitigation strategies OEMs might apply for use with CO_2 refrigerant.

Comment: One commenter stated that secondary loop technology is not a viable risk mitigation strategy for CO_2 because of reduced system performance and reduced fuel efficiency.

Response: This final rule does not specify design options. EPA does not intend to limit engineering innovation by requiring any specific risk mitigation strategy; however, EPA notes that secondary loop technology could potentially reduce the risks of exceeding the ceiling limit of CO_2 in the passenger compartment because the refrigerant charge stays separate from the passenger compartment. OEMs may choose to investigate secondary loops as a risk mitigation strategy, and would have to weigh the pros and cons, including any potential effect on fuel efficiency. However, even if secondary loop technology were not an attractive option, other feasible mitigation technologies could be applied to meet the use conditions of this final rule, such as a squib valve with a 3-second response time.

Comment: One commenter indicated that squib valves with activation time of less than 10 seconds (e.g., few milliseconds) are available and such devices have been tested. Another commenter stated that a 10-second squib valve is not technically feasible given CO_2 sensor performance. Additionally, the commenter stated that during sharp increases in CO_2 concentration in the passenger compartment, a short activation time for a squib-valve would increase the possibility of purging the refrigerant from the air conditioning system to outside the vehicle when no leak in fact exists.

Response: EPA agrees with the first commenter regarding the availability of squib valves and disagrees with the second commenter's statement regarding feasibility of a squib valve. The 2006 U.S. Army risk analysis indicated that a squib valve is one effective strategy and viable engineering option to reduce the amount of charge that could potentially leak into the passenger compartment (EPA–HQ–OAR–2004–0488–0025.2). EPA notes that in the proposal, we intended for the squib valve activation time to include: 1) the time the sensor takes to detect a significant leak that would cause CO_2 refrigerant to enter into the passenger compartment, and 2) the time it takes for the squib valve to open (71 FR 55140; September 21, 2006). The 2006 U.S. Army risk assessment evaluated different activation times (i.e., 30, 10 and 3 seconds) of squib valve during modeled scenarios of CO_2 refrigerant leak. The results showed higher effectiveness of the valve preventing high refrigerant concentration reaching the passenger compartment during the shorter activation time.

EPA believes that sharp increases in CO_2 concentration in the passenger compartment will likely occur only when a significant amount of CO_2 refrigerant leaks into the passenger compartment. Risk assessments showed that CO_2 buildup due to passenger respiration occurs slowly (e.g., 60 minutes) to levels up to 2.4% in a fully-occupied 100 cubic feet sealed passenger compartment of a vehicle with no introduction of outside air (EPA–HQ–OAR–2004–0488–0025.2, –0041). EPA notes that a passenger compartment in a vehicle is not confined space and infiltration/exfiltration rates of air changes within the passenger compartment and outside air are at least 0.3 air changes per hour (NREL, 2003 as cited in EPA–HQ–OAR–2004–0488–0025.2). Therefore, we do not agree that refrigerant purging from the air conditioning system to outside the vehicle will occur when no leak in fact exists.

Comment: A commenter stated that odorants that alert drivers to a leak should be another option for compliance with the rule.

Response: EPA did not propose the use of odorants, and this final action neither requires nor prohibits the use of odorants in new CO_2 MVAC systems. Odorized CO_2 may be an effective means to alert the driver and passengers to a refrigerant leak into the passenger compartment. However, EPA does not believe odorants used alone provide sufficient risk mitigation as it may take vehicle occupants a period of time to recognize what the odor signifies. Documentation has not been provided to show how long and how much odorized CO_2 drivers must be exposed to before they recognize that the smell indicates a health and safety risk.

Comment: One commenter suggested that EPA consider use of sensors to allow continuous monitoring of refrigerant concentration inside the passenger cabin as a mitigation strategy. Another commenter mentioned that an alarm system or other technical solutions should allow for air renewal and lowering concentration levels below the limits indicated in the use conditions within a reasonable time period

Response: As noted previously, EPA is not specifying the risk mitigation strategies that must be used to ensure CO_2 levels do not exceed the levels established in the use conditions. We do not believe that a sensor alone would be sufficient to provide effective protection to the passengers and to ensure that concentrations inside the passenger compartment and passenger breathing zone do not exceed the established CO_2 concentration limits of this final rule. In response to the commenter stating that an alarm system or other technical solutions should allow for air renewal, EPA believes the use of such tool might be effective but that such strategy would need to rely on an automatic supply of air, rather than a driver's response, to ensure CO_2 concentrations do not exceed the exposure limits established in the use conditions. Thus, an additional mitigation device would need to be used in addition to any alarm system.

Comment: One commenter said that evaporator isolation valves are not realistic as mitigation devices because of cost. The commenter stated that close-coupled and hermetically sealed systems are technically feasible and noted that an automatic increase in air exchange is a possible strategy that is technically feasible. Another commenter suggested that switching the MVAC blower to operate on outside air mode on high, rapidly after CO_2 refrigerant is released, could reduce the overall refrigerant concentration in the compartment to a peak lower than 4%.

Response: EPA believes the mitigation strategies mentioned by the commenters may all be technically feasible means to meet concentration levels specified in the use conditions. We note that in the proposed rule we suggested using evaporator isolation valves, close coupled or hermetically closed systems that would reduce refrigerant charge size, and increasing air exchange (with outside air) in the passenger compartment upon detection of leaks as some of several potential risk mitigation strategies (71 FR 55140; September 21, 2006). In this final rule we are not requiring a specific mitigation strategy or engineering device. We are allowing OEMs to choose a mitigation strategy that is consistent with the use conditions and that they will employ to protect the driver and passengers in a vehicle from CO_2 exposure above the limits specified in this rule.

Comment: One commenter stated that a vehicle crash could be so severe that the MVAC system evaporator could be damaged and possibly reduce a risk mitigation system's effectiveness. The commenter proposed the inclusion of an evaporator crush resistance standard in this action.

Response: EPA agrees that a vehicle crash could reduce the effectiveness of the risk mitigation strategy. However we believe that in such a case, the damage to the car would be so severe as to result in an inflow of ambient air that would negate the risks associated with potentially elevated CO_2 concentrations. A crush-resistant evaporator could be selected as a possible mitigation strategy but, as stated previously, in this final rule we do not specify which engineering device or strategies must be incorporated into the MVAC system and leave this choice to the OEMs.

C. Industry Standards

Comment: Several commenters indicated that SAE is developing standards for safety and servicing of CO_2 MVAC systems and that it is customary for OEMs to follow those standards. Other commenter claimed that every OEM is responsible for its own safety concept and has to show compliance with already existing and future safety standards.

Response: EPA notes and agrees with the important role industry standards play particularly for the MVAC sector. In addition, we note that the regulatory text references the relevant SAE technical standards to promote consistency with established industry practices. Specifically, use conditions in this final rule reference SAE J639 (2011 version). Other standards such as SAE J1739, which addresses design, safety, and recordkeeping requirements, are recommended to help ensure that the use conditions are met.

We disagree with the comment stating that every OEM is responsible for its own safety concept because we believe that in addition to customary business standards and industry practices outside the scope of this rule, OEMs will comply with all the use conditions specified in this rule.

Comment: Commenters noted that SAE is developing SAE J2772 standard, ''Measurement of Passenger Compartment Refrigerant Concentrations Under System Refrigerant Leakage Conditions'' (EPA–HQ–OAR–2004–0448–0054) and SAE J2773 standard, ''Standard for Safety and Risk Analysis for Use in Mobile Air Conditioning Systems'' (EPA–HQ–OAR–2004–0448–00553), formerly known as Refrigerant Guidelines for Safety and Risk Analysis for Use in Mobile Air Conditioning Systems.

Response: We note that standards J2772 and J2773 were recently published and are readily available. In the comments column of our listing decision, we recommend the use of J2772 and J2773 standards as well as other available standards such as SAE J1052, Motor Vehicle Driver and Passenger Head Position (EPA–HQ–OAR–2004–0448–0055).

D. Servicing

Comment: One commenter indicated CAA Section 609-certified, independent MVAC service technicians should be consulted before the rule is issued.

Response: EPA took comments on a range of topics during the 60-day public comment period. In addition, EPA contacted the National Institute for Automotive Service Excellence (ASE), which represents a significant number of MVAC service technicians. A summary is in the docket for this final rule. ASE stated they did not see any servicing concerns in the proposal that would impact the service technicians they represent, but would be interested in any follow-on rulemaking that will address MVAC servicing for consideration under CAA Section 609 and codified at 40 CFR part 82 subpart B (EPA–HQ–OAR–2004–0488–0031).

Comment: One commenter said risks associated with MVAC service should be considered.

Response: EPA agrees with the commenter and notes that risk associated with service were evaluated in the published risk analyses (EPA–HQ–OAR–2004–0488–0017, –0025.2, –0041, –0051) and discussed in the preamble to the proposed rulemaking (71 FR 55144 September 21, 2006). Additional details regarding our evaluation of risk associated with MVAC service can be found in Section VI of this final rule preamble (Why is EPA listing CO_2 acceptable subject to use conditions?). As explained in more detail in Section VI above, we do not believe it is necessary to establish any use conditions regarding servicing because the overall environmental and human health risks posed by the use of CO_2 in new MVAC systems, subject to the use conditions being adopted in this final rule, is lower than or comparable to the risks posed by other substitutes found acceptable subject to use conditions in the same end-use.

Comment: One commenter requested more information on why CO_2 systems are not found acceptable as a substitute in retrofitted systems.

Response: In the original SNAP rulemaking (59 FR 13854; March 18, 1994), EPA listed CO_2 as an acceptable substitute for CFC–12 only for new MVAC systems. We have never received a SNAP submission requesting consideration of CO_2 in retrofitted MVAC systems. EPA understands that the higher working pressure of CO_2 compared to CFC–12 and other SNAP-acceptable refrigerants could raise significant issues with retrofitting such systems to CO_2. Because we have not received a request to use CO_2 in retrofitted systems, which would include the technical and other analyses necessary to determine whether such use would present more risk than other available substitutes, this final rule only applies to the use of CO_2 as a refrigerant in new MVAC systems, consistent with the NPRM (71 FR 55140; September 21, 2006). When and if the Agency receives a submission for retrofitting to CO_2, we will consider CO_2 for use as a refrigerant to retrofit existing MVAC systems.

IX. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory 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 Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011) 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 under the Paperwork Reduction Act (44 U.S.C.

3501 *et seq).* This action is an Agency determination. It contains no new requirements for reporting. The only new recordkeeping requirement involves customary business practice. This rule requires minimal recordkeeping of studies done for three years to ensure that MVAC systems using CO_2 meet the requirements set forth in this rule. Because it is customary business practice that OEMs conduct and keep on file records of the tests they perform, consistent with a widely recognized industry standard, SAE J1739 (Potential Failure Mode and Effect Analysis in Design [Design FMEA], Potential Failure Mode and Effect Analysis in Manufacturing and Assembly Processes [Process FMEA]), on any potentially hazardous part or system from the beginning of production of a vehicle model until three years or more after production of the model ends, we believe this requirement will not impose an additional paperwork burden. However, 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. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (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;'' (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 final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This final rule modifies the current listing of CO_2 as an acceptable alternative refrigerant subject to use conditions necessary for the safe use of CO_2 in MVAC in new motor vehicles. The use conditions will need to be met by large entities (i.e., OEMs) that manufacturer motor vehicles if these choose to use CO_2 as a refrigerant in new MVACs. This final rule does not mandate the use of CO_2 as a refrigerant in new MVAC systems, thus will not impose significant requirements on small entities such as MVAC service shops. This final rule effectively ensures consistency with current practices in MVAC service shops regarding the use of unique fittings. It is not clear that there would be any cost differential between the unique fittings required for the use of CO_2 and those used with the current automotive refrigerant, HFC-134a, or other fittings that the industry could adopt instead, for other refrigerants. It is possible that the fittings required in the revised use condition will be equally or less expensive than those required for other acceptable alternative refrigerants because they are a standard shape and size and can be easily produced in a metal-working shop. Thus, cost impacts of this final rule on small entities are expected to be small.

Although this final rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. EPA has worked together with SAE International and with groups representing professional service technicians such as the Mobile Air Conditioning Society Worldwide, which conducts regular outreach with technicians and owners of small businesses such as retail refrigerant suppliers and automobile repair shops.

D. Unfunded Mandates Reform Act

This action contains no Federal mandates under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538 for State, local, or tribal governments or the private sector. This action does not affect State, local, or tribal governments. The enforceable requirements of this action related to integrating risk mitigation devices and documenting the safety of alternative MVAC systems affect only a small number of OEMs. The impact of this action on the private sector will be less than $100 million per year. Thus, this action is not subject to the requirements of sections 202 and 205 of the UMRA. This action 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. This action applies directly to facilities that use these substances and not to governmental entities.

E. Executive Order 13132: Federalism

This action 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 EO 13132 (64 FR 43255, August 10, 1999). This regulation applies directly to facilities that use these substances and not to governmental entities. Thus, EO 13132 does not apply to this rule.

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

This final rule does not have tribal implications, as specified in EO 13175 (65 FR 67249, November 6, 2000). It does not significantly or uniquely affect the communities of Indian tribal governments, because this regulation applies directly to facilities that use these substances and not to governmental entities. Thus, EO 13175 does not apply to this rule.

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

This final rule is not subject to the EO 13045 (62 FR 19885, April 23, 1997) because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to 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 discussed in sections VI and VIII of the preamble and in documents EPA–HQ–OAR–2004–0488–0025.2, EPA–HQ–OAR–2004–0488–0041 and EPA–HQ–OAR–2004–0488–0051 in the docket for this rulemaking.

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

This rule is not a ''significant energy action'' as defined in Executive Order 13211 (66 FR 28355; 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 manufacturers of CO_2 MVAC systems for new vehicles.

Preliminary information indicates that these new systems are equally or more energy efficient than currently available systems in some climates. Therefore, we conclude that this rule is not likely to have any adverse effects on energy supply, distribution or use.

I. National Technology Transfer Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995, Public Law 104–113, Section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in 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 rulemaking involves technical standards. EPA has incorporate by reference, the 2011 version of SAE standard J639 which is a voluntary consensus standard. This standard can be obtained from *http://www.sae.org/technical/standards/.* This standard addresses safety and reliability issues of CO_2 MVAC systems.

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

Executive Order 12898 (59 FR 7629; February 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 final 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 without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. The refrigerant CO_2 is a non ozone-depleting substance with a GWP of 1.0. Based on the toxicological and atmospheric data described earlier, the use of CO_2 subject to the use conditions specified in this final rule will not have any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This final rule requires specific use conditions for MVAC systems, if motor vehicle manufacturers choose to market MVAC systems using this refrigerant alternative.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.,* as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A Major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). This rule will be effective August 6, 2012.

X. 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–2004–0488 at *http://www.regulations.gov.*

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List of Subjects in 40 CFR Part 82

Environmental protection, Administrative practicable and procedure, Air pollution control, Reporting and recordkeeping requirements, Stratospheric ozone layer.

Dated: May 23, 2012.

Lisa P. Jackson,

Administrator.

For the reasons set out in the preamble, 40 CFR Part 82 is 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

■ 2. In Appendix B to Subpart G of Part 82, add an entry to the end of the table for ''Refrigerants-Acceptable Subject to Use Conditions,'' and revise footnotes 1, 2, and 3 to read as follows:

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 Motor Vehicle Air Conditioning (New equipment only).	Carbon dioxide (CO_2) as a substitute for CFC–12.	Acceptable subject to use conditions.	Engineering strategies and/or mitigation devices shall be incorporated such that in the event of refrigerant leaks, the resulting CO_2 concentrations do not exceed:	Additional training for service technicians is recommended.
			The short term exposure level (STEL) of 3% or 30,000 ppm averaged over 15 minutes in the passenger free space [1]; and; The ceiling limit of 4% or 40,000 ppm in the passenger breathing zone.[2]	In designing risk mitigation strategies and/or devices, manufacturers should factor in background CO_2 concentrations in the passenger cabin potentially contributed from normal respiration by the maximum number of vehicle occupants.
			Vehicle manufacturers must keep records of the tests performed for a minimum period of three years demonstrating that CO_2 refrigerant levels do not exceed the STEL of 3% averaged over 15 minutes in the passenger free space, and the ceiling limit of 4% in the breathing zone.	Use of the standards SAE J1052, SAE J2772, and SAE J2773 is recommended as additional reference.
			The use of CO_2 in MVAC systems must adhere to the standard conditions identified in SAE Standard J639 (2011 version) including: Installation of a high pressure system warning label; Installation of a compressor cut-off switch; and Use of unique fittings with: Outside diameter of 16.6 +0/−0.2 mm (0.6535 +0/−0.0078 inches) for the MVAC low-side; Outside diameter of 18.1 +0/−0.2 mm (0.7126 +0/−0.0078 inches) for the MVAC high-side; and Outside diameter of 20.955 +0/−0.127 mm (0.825 +0/−0.005 inches) and right-hand thread direction for CO_2 refrigerant service containers.[3]	Manufacturers should conduct and keep on file Potential Failure Mode and Effects Analysis in Design [Design FMEA], Potential Failure Mode and Effect Analysis in Manufacturing and Assembly Process [Process FMEA] on the MVAC as stated in SAE J1739.

[1] Free space is defined as the space inside the passenger compartment excluding the space enclosed by the ducting in the HVAC module.

[2] Area inside the passenger compartment where the driver's and passengers' heads are located during a normal sitting position. Refer to SAE J1052 for information on determining passenger head position.

[3] The refrigerant service containers fitting requirement applies only to refrigerant service containers used during servicing of the MVAC, in accordance with the provisions established for MVAC servicing under 40 CFR part 82, subpart B.

* * * * *

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DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

49 CFR Part 395

Regulatory Guidance on the Applicability of Property-Carrier Hours-of-Service Rules to the Driveaway Operation of Vehicles Designed to Transport Passengers

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), DOT.

ACTION: Notice of regulatory guidance.

SUMMARY: The property-carrier hours-of-service (HOS) rules in 49 CFR 395.3 are applicable to drivers operating commercial motor vehicles designed or used to transport passengers on ''driveaway-towaway'' trips, as defined in 49 CFR 390.5. This notice provides Federal and State enforcement personnel, and the motor carrier industry, with uniform guidance concerning these rules.

DATES: *Effective Date:* This regulatory guidance is effective June 6, 2012.

FOR FURTHER INFORMATION CONTACT: Thomas L. Yager, Chief, Driver and Carrier Operations Division, Federal Motor Carrier Safety Administration, 1200 New Jersey Ave. SE., Washington, DC 20590. Email: *MCPSD@dot.gov.* Phone (202) 366–4325.

SUPPLEMENTARY INFORMATION:

Legal Basis

The Motor Carrier Act of 1935 provides that ''The Secretary of Transportation may prescribe requirements for (1) qualifications and maximum hours of service of employees of, and safety of operation and equipment of, a motor carrier; and (2) qualifications and maximum hours of service of employees of, and standards for equipment of, a motor private carrier, when needed to promote safety of operation'' [49 U.S.C. 31502(b)].

The Motor Carrier Safety Act of 1984 (MCSA) confers on the Secretary the authority to regulate drivers, motor carriers, and vehicle equipment. It requires the Secretary to prescribe safety standards for commercial motor vehicles (CMVs). At a minimum, the regulations must ensure that (1) CMVs are maintained, equipped, loaded, and operated safely; (2) the responsibilities imposed on operators of CMVs do not impair their ability to operate the vehicles safely; (3) the physical condition of operators of CMVs is adequate to enable them to operate the vehicles safely; and (4) the operation of CMVs does not have a deleterious effect on the physical condition of the operator [49 U.S.C. 31136(a)]. The Act also grants the Secretary broad power to ''prescribe recordkeeping and reporting requirements'' and to ''perform other acts the Secretary considers appropriate'' [49 U.S.C. 31133(a)(8) and (10)].

The Administrator of FMCSA has been delegated authority to carry out the functions vested in the Secretary by the Motor Carrier Act of 1935 [49 CFR 1.73(l)], and the MCSA [§ 1.73(g)]. The provisions affected by this Notice of Regulatory Guidance are based on these statutes.

Background

This document adds regulatory guidance on the applicability of the hours-of-service (HOS) regulations for property-carrying drivers in 49 CFR 395.3 to drivers of vehicles designed or used to transport passengers, while operating the vehicle on a ''driveaway-towaway'' trip as defined 49 CFR 390.5. These drivers often work for motor carriers that specialize in delivery of commercial motor vehicles (CMVs), and they do not operate CMVs to transport passengers on a regular basis.

The § 390.5 definition of ''driveaway-towaway'' is ''* * * an operation in which an empty or unladen motor vehicle with one or more sets of wheels on the surface of the roadway is being transported: (1) Between vehicle manufacturer's facilities; (2) between a vehicle manufacturer and a dealership or purchaser; (3) between a dealership, or other entity selling or leasing the vehicle, and a purchaser or lessee; (4) to a motor carrier's terminal or repair facility for the repair of disabling damage (as defined in § 390.5) following a crash; (5) to a motor carrier's terminal or repair facility for repairs associated with the failure of a vehicle component or system; or (6) by means of a saddle-mount or tow-bar.''

Reason for This Notice

Section 395.3 prescribes the primary HOS regulations applicable to property-carrying drivers, and § 395.5 prescribes the comparable regulations for passenger-carrying drivers. Neither the term ''property-carrying'' nor ''passenger-carrying'' is defined in these regulations. The FMCSA has received inquiries from motor carriers as to whether the property-carrying or passenger-carrying HOS rules would apply in driveaway situations usually involving the delivery of a bus, motorcoach, or similar CMV from the manufacturer or distributor to the dealer, or similar scenario. The Agency agrees that regulatory guidance is needed to clarify applicability of the HOS regulations. For the reasons explained above, FMCSA issues Regulatory Guidance Question 1 to § 395.5 of the FMCSRs.

PART 395—HOURS OF SERVICE OF DRIVERS

§ 395.5 ''Maximum driving time for passenger-carrying vehicles.''

''*Question 1:* Would a driver delivering an empty commercial motor vehicle designed or used to carry passengers, from the manufacturer or distributor to a dealer, or otherwise engaged in a ''driveaway-towaway'' trip as defined in § 390.5, be required to comply with the hours-of-service regulations for passenger-carrying drivers?

Guidance:

No. The *property-carrier* hours-of-service rules in § 395.3 are applicable to drivers operating commercial motor vehicles designed or used to transport passengers in a ''driveaway-towaway'' operation, as defined in § 390.5.''

Issued on: May 29, 2012.

Anne S. Ferro,

Administrator.

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