



Title	ES-301-2.02B Management of Refrigerant in Motor Vehicle Air Conditioning (MVAC) Systems
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1) Activity Description: Management of Refrigerant in Motor Vehicle Air Conditioning (MVAC) Systems

The storage, use, release, and disposal of refrigerants

- Motor vehicle air conditioning (MVAC) equipment; and
- MVAC-like systems

Section 609 of the CAA and Colorado Air Quality Regulation No. 15 establish standards for recovering and recycling refrigerants from MVACs, training and certification requirements for technicians handling this equipment, and recordkeeping and notification requirements for service facilities.

2) Potential Environmental Risks

A. The following environmental concerns are associated with these activities:

- i) Air pollution - emissions of ozone depleting substances (ODS) and greenhouse gases (GHG). Chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HCFCs) are refrigerants that are ozone depleting substances (ODSs). Hydrofluorocarbons (HFCs) are refrigerants that were originally developed to replace CFCs and HCFCs. CFCs, HCFCs and HFCs are greenhouse gases
- ii) Improper management of refrigerant

B. Potential consequences from performing the activity incorrectly:

- i) Damage to the environment
- ii) Regulatory and judicial enforcement actions and related [financial and non-financial] penalties

3) Critical Operating Requirements

A. Prohibited Activities

- i) Intentional venting of refrigerant to the atmosphere.

B. General Considerations

- i) Each airport tenant, contractor, and operator that owns, maintains, services, or repairs MVAC systems is responsible for understanding the applicable regulations and managing their activities accordingly; this Environmental Guideline is meant as guidance and does not supersede any regulations.
- ii) Technicians that maintain or repair MVAC systems must have the proper training certification from an EPA-approved training provider.
- iii) Records must be kept for regulated maintenance activities
- iv) Records must be kept on site at the facility for a minimum of 3 years.

C. Training Requirements

- i) Technicians who repair or service MVACs must be trained and certified by an EPA-approved organization. Training programs must include information on the proper use of equipment, the regulatory requirements, the importance of refrigerant recovery, and the effects of ozone depletion. A test is required.

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- D. Storage and Materials Management Requirements
 - i) MVAC system service owners and operators should evaluate their activities for regulation under the federal and state regulations.
 - ii) Refrigerant should be stored so as to prevent releases and emissions.
 - iii) Operators should manage new and used refrigerant in accordance with federal and state ODC regulations.

4) Planning Requirements

- A. Properly select equipment and systems that will utilize lower impact HCFCs and that will reduce leakage by design. Equipment and systems should allow addition and removal of refrigerant while minimizing loss.
- B. Emphasize the recovery, recycling, and reuse of refrigerants. The operator should institute management systems that will emphasize recovery of refrigeration fluids that become contaminated. This includes using agents who in turn use self-certified equipment for refrigerant recovery that complies with USEPA standards pursuant to 40 CFR Part 82.
- C. Provide capability to measure refrigerant weights as added and removed from refrigeration systems. Perform leak rate calculations as required.
- D. Record EPA certificates for each technician and institute measures to ensure that these are the only personnel who work on applicable systems (i.e., stationary and MVAC and MVAC-like systems).
- E. A recordkeeping system should be instituted to organize and maintain applicable records.

5) Critical Tasks

- A. Demonstrate compliance with technician certification requirements prior to conducting maintenance or repair activities on MVAC systems.
- B. Demonstrate compliance with pre-disposal refrigerant removal/recovery and related documentation requirements prior to disposal of regulated refrigerant.
- C. Store refrigeration fluid containers in such a manner so as to prevent or minimize the possibility of leaks (e.g., cylinders should have plugs in their outlets to back up valves).

6) Emergency Response

- A. There are no specific emergency response requirements associated with the release of refrigerants.
- B. There is the possibility that the release of refrigerants in a closed area can reduce oxygen levels. This is a safety issue and would need to be reported to the DEN Communications Center.

- C. An R-12 (CAS No. 75-71-8) release at or above certain thresholds (RQ ≥ 5,000 pounds) are reportable pursuant to the EPA List of Lists. There are no reportable quantities for R-22, R-414 or R-134a.

7) Inspection and Maintenance Requirements

- A. Weigh and record amounts of refrigerant added to systems or equipment during maintenance or as “trim” charges. Perform leak rate calculations every time refrigerant is added to systems or equipment.
- B. Monitor and inspect regulated equipment performance problems that could lead to releases.
- C. Document all maintenance activities including leak rate calculations and weights of ODCs sent for disposal, recycle, or reclamation.

8) Expected Records and Outputs

- A. Technician Training Records
 - MVAC or MVAC-like Systems
 - Training by USEPA-certified program per 40 CFR Part 82.40
 - ii) Operator to maintain records – minimum of 3 years.
- B. Refrigerant purchasing, recovery, recycle, and disposal records
 - i) Operator to maintain records – minimum of 3 years.

9) References

- A. Phone Numbers
 - i) DEN Communications Center (for spill reporting) (303) 342-4200
 - ii) DEN Environmental Services (Main Line) (303) 342-2730
 - iii) Kim Ohlson (DEN Environmental Services) (303) 342-2637
- B. Guidance Materials (list is not limited to the following)
 - i) U.S. EPA Fact Sheets on Motor Vehicle Air Conditioning:
<http://www.epa.gov/ozone/title6/609/index.html>
- C. Training Materials (list is not limited to the following)
 - i) For Motor Vehicle Air Conditioning Service technicians
- D. Related Environmental Documents (list is not limited to the following)
 - i) ES-301-2.02A Management of Refrigerant in Stationary Equipment
 - ii) ES-308-1.02A Management of Refrigerant in Stationary Equipment Work Instruction
 - iii) ES -308-1.02B Management of Refrigerant in Motor Vehicle Air Conditioning Systems (MVAC) Work Instruction
- E. Applicable Regulations (list is not limited to the following)

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- i) Federal air quality regulations for refrigerants in MVAC systems. Section 609 of the Clean Air Act (40 CFR Part 82)
 - ii) State air quality regulations (5 CCR 1001-2, -3, -5, -8, -9, -19, and -22).
 - iii) CDPHE Air Quality Control Regulation Number 15 “Regulation to Control Emissions of Ozone Depleting Chemicals”
 - iv) Local air quality regulations (D.R.M.C. Title II, Chapter 4, Article III)
- F. Other Documents (list is not limited to the following)
- i) None

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