

***EG 3-2: Heating, Ventilation, and Air Conditioning (HVAC) Operations***

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**I. Activity Description:**

The Clark County Department of Aviation (CCDOA) operates several large heating, ventilation and air conditioning (HVAC) systems from McCarran airport's Terminal 1 and Terminal 3 Central Plants, as well as systems located at Henderson Executive Airport, North Las Vegas Airport and the McCarran Rent-A-Car Center. The purpose of these systems is to provide the facilities with hot and cold water, and heated and air-conditioned air. The systems include boilers, chilled water systems and cooling towers. The boilers located at each facility burn natural gas. HVAC operations and equipment are managed by the CCDOA staff. There are numerous hydrochlorofluorocarbon (HCFC) refrigeration and air conditioning systems within Clark County Department of Aviation facilities that contain regulated refrigerant charges and require registration and/or maintenance recordkeeping, such as leak rate calculations

Various airport tenants also operate individual HVAC systems which ODC (Ozone Depleting Compound) emissions may be regulated by the Clean Air Act including specific ODC regulations

**II. Potential Environmental Risks**

- A. The CCDOA - Environmental, Health & Safety (EHS) office has identified the following environmental concerns associated with these activities:
  - 1. Air pollution
  - 2. Improper management of refrigerant
- B. Potential consequences from performing the activity incorrectly:
  - 1. Intentional and unintentional releases of ODCs into the environment
  - 2. Personal injury
  - 3. Damage to the environment
  - 4. Citations, Notices of Violation and related (financial & non-financial) penalties

**III. Critical Operating Requirements**

- A. Prohibited Activities
  - 1. Operating equipment without applicable permits
  - 2. Intentional venting of refrigerants is illegal under federal and state law
  - 3. Do not allow unpermitted discharge raw chemicals into the sanitary sewer system
  - 4. Improper disposal of appliances containing regulated ODC refrigerant charge

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B. General Considerations

1. Each tenant, contractor and operator conducting HVAC operations 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
2. Combustion systems should be evaluated for air permit submittal requirement
3. Technicians that install or remove refrigerants, or that maintain or repair stationary or mobile air conditioning or refrigeration equipment, must have the proper training certification
4. Records must be kept on-site for three (3) years for maintenance activities on regulated equipment and ODC refrigerant consumption
5. Leak rate calculations must be performed for regulated stationary equipment each time ODCs are added to the equipment charge
6. Equipment losses of ODCs above regulatory thresholds trigger leak repairs that must be performed within the applicable regulatory timetable

C. Training Requirements

1. Technicians who repair or service ODCs on HVAC and motor vehicle air conditioners (CFC-12 and HFC 134a), 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

D. Storage and Materials Management Requirements

1. HVAC owners and operators should evaluate their systems emissions for regulation under the Clean Air Act
2. HVAC chemicals should be stored so as to prevent releases and emissions
3. HVAC owners and operators should manage used refrigerant oil in accordance with federal, state and local used oil regulations
4. HVAC operators should manage new and used refrigerant in accordance with federal, state and local ODC regulations
5. Used oils should be evaluated for halogenated contaminants. Process knowledge is recognized a potential basis for this determination

**IV. 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 CFC/HCFC refrigerants. The operator should institute management systems that will emphasize recovery of refrigeration fluids that become contaminated. This includes using qualified individuals who in turn

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use self-certified equipment for refrigerant recovery that comply with USEPA standards pursuant to 40CFR, Part 82

- C. Provide capability to measure CFC/HCFC refrigerant weights as added and removed from refrigeration systems. Perform leak rate calculations as required
- D. Record training completion certificates for each technician and institute measures to assure these are the only personnel that 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
- F. Thermal system insulation and other suspect materials must be tested for asbestos content prior to disturbing the material. Abatement of asbestos-containing materials may be necessary prior to commencement of maintenance/repair activities on components, ducts and pipework

#### **V. Critical Tasks**

- A. The operator will conduct HVAC operations, monitoring and recordkeeping in accordance with the Clark County Department of Air Quality Operating Permit, federal and state ODC regulations, federal and state solid waste regulations and federal and state used oil regulations
- B. The operator will operate and maintain the equipment to assure compliance with any CAA, CWA and solid waste applicable laws, regulations, guidance and permits
- C. Demonstrate compliance with technician training and certification requirements prior to conducting maintenance or repair activities on stationary or mobile equipment containing regulated ODC charges
- D. Demonstrate compliance with leak rate calculation requirements each time ODCs are added to regulated stationary equipment or systems
- E. Demonstrate compliance with leak repair timetable when leak rate thresholds are exceeded for regulated stationary equipment
- F. Demonstrate compliance with pre-disposal ODC removal/recovery and related documentation requirements prior to disposal of regulated ODC-containing equipment
- G. Store refrigeration fluid containers in such a manner to prevent or minimize the possibility of leaks (e.g., cylinders should have plugs in their outlets to back up valves)

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## **VI. Emergency Response**

- A. If a spill occurs, immediately stop the source of the spill, if possible. Refer to Environmental Guideline EG 6-1, Spill Response.
- B. There are no specific emergency response requirements associated with the release of ODCs. However, there is a requirement to repair systems with more than 50 pounds of ODC refrigerant capacity that have lost a significant percentage of their charge (15% for comfort cooling and 35% for industrial applications) prorated per a one-year period since the last addition of ODC to the equipment OR one year, whichever is shorter. Leaking equipment should be shut down for repairs or maintenance to reduce the leakage rate below the applicable threshold level. If the leak rate cannot be repaired within the 30-day time period, the equipment should be removed until the equipment can be replaced
- C. There is the possibility that the release of ODC materials in a closed area can reduce oxygen levels. This is a safety issue and needs to be reported to the McCarran Airport Control Center (702-261-5125)
- D. R-12 (CAS No. 75-71-8) and R-22 (CAS No. 75-45-6) releases at certain thresholds are reportable pursuant to the EPA. There are no reportable quantities for R-414 or R-134a

## **VII. Inspection and Maintenance Requirements**

- A. Owner and operator will conduct HVAC inspections and maintenance in accordance with the Clark County Department of Air Quality Operating Permit, federal and state ODC regulations, and federal and state used oil regulations

## **VIII. Expected Records and Outputs**

- A. Waste Management Records (manifests, recycling/reclaiming records, etc.)
  - 1. Operators must maintain waste management records on-site for a minimum of three (3) years
- B. Technician Training Records
  - 1. Operator to maintain records for a minimum of three (3) years
- C. Air Permit Records
  - 1. Operator to maintain records and active permit as required by the Clark County Department of Air Quality
- D. Refrigerant Purchasing and Recovery, Recycle and Disposal Records
  - 1. Operator to maintain records for a minimum of three (3) years

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## IX. References

- A. Phone Numbers
  - 1. CCDOA (Airport) Control Center (spill and release reporting).....(702) 261-5125
  - 2. Henderson Executive Airport Customer Service Desk.....(702) 261-4800
  - 3. North Las Vegas Airport Customer Service Desk.....(702) 261-3806
  - 4. CCDOA Environmental, Health & Safety (EHS).....(702) 261-5692
  - 5. NDEP Spill Reporting Hotline(for spills 25 gallons or greater)..... 1(888) 331-6337
- B. Guidance Materials (list is not limited to the following)
  - 1. Owner/Operator maintenance (O&M) manual for all boilers
  - 2. Manufacturer's operating and maintenance (O&M) manual for all refrigeration systems and associated cooling water systems
- C. Training Materials (list is not limited to the following)
  - 1. Plans and records for operators to comply with all applicable constraints
- D. Related Environmental Documents (list is not limited to the following)
  - 1. Environmental Guideline EG 1-2, Cleaning Washing - Aircraft \_Vehicles and Equipment
  - 2. Environmental Guideline EG 1-3, Cargo Loading and Offloading
  - 3. Environmental Guideline EG 1-4, Management of Aircraft Lavatory Water and Waste
  - 4. Environmental Guideline EG 1-5, Maintenance of Aircraft, Vehicles and Equipment
  - 5. Environmental Guideline EG 1-7, Storage of Vehicles and Equipment Containing Chemicals
  - 6. Environmental Guideline EG 2-1, Painting and Paint Removal
  - 7. Environmental Guideline EG 2-2, Cleaning Washing - Indoor Industrial Surfaces
  - 8. Environmental Guideline EG 2-3, Maintenance of Pretreatment Devices
  - 9. Environmental Guideline EG 2-4, Janitorial Activities
  - 10. Environmental Guideline EG 2-5, Cleaning Washing - Outdoor Areas and Structures
  - 11. Environmental Guideline EG 3-1, Ozone Depleting Compound Management
  - 12. Environmental Guideline EG 3-2, Heating, Ventilation, and Air Conditioning (HVAC) Operations
  - 13. Environmental Guideline EG 3-4, Metal Finishing, Coating, Machining, and Cooling
  - 14. Environmental Guideline EG 3-5, Parts Washing

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15. Environmental Guideline EG 4-1, Construction
  16. Environmental Guideline EG 4-2, Planning and Design
  17. Environmental Guideline EG 4-3, Procurement
  18. Environmental Guideline EG 4-4, Tenant Operating Guidance
  19. Environmental Guideline EG 4-5, Tenant Relocation or Closeout
  20. Environmental Guideline EG 5-2, Management of Petroleum Products (SPCC Plan)
  21. Environmental Guideline EG 5-3, Storage, Handling and Management of Hazardous Materials
  22. Environmental Guideline EG 6-1, Spill Response
  23. Environmental Guideline EG 6-2, Abandoned Material Response
  24. Environmental Guideline EG 7-1, General Waste Management
  25. Environmental Guideline EG 7-2, Management of Recyclable and Reusable Materials
  26. Environmental Guideline EG 7-3, Management of Hazardous Wastes
  27. Environmental Guideline EG 7-4, Management of Universal Wastes
  28. Environmental Guideline EG 7-5, Management of Special Wastes
- E. Applicable Regulations (list is not limited to the following)
1. NAC 444/NRS 444 Sanitation
  2. NAC 444A.005-444A.470/NRS 444A.010-444A.080 Recycling Programs
  3. NAC 445B Air Controls
  4. NAC 459 Hazardous Materials
  5. NRS 459.748-459.773 Responding to Spills, Accidents and Incidents
  6. 29 CFR 1910 Occupational Safety and Health Standards
  7. 40 CFR Protection of the Environment
  8. 49 CFR Transportation
  9. Uniform Fire Code/NFPA
- F. Other Documents (list is not limited to the following)
1. Airport Rules and Regulations

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