Environmental Management

WORK INSTRUCTIONS

MAINTENANCE OF REFRIGERANT APPLIANCE

Reference Procedure:
AQ-PROC-200

Purpose:
The purpose of these instructions is to comply with requirements for maintenance, service, and repair of refrigerant containing appliances. The instructions outline the work practices for all refrigerant appliances and recordkeeping necessary to collect and retain required data on AQ-FORM-201 from the maintenance/service/repair of an appliance which contains 50 pounds or more of refrigerant per circuit and where refrigerant was added or evacuated from the appliance. AQ-FORM-201 must be submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Scope:
The instructions apply to all University employees, contractors, and vendors that maintain, service, or repair refrigerant appliances.

Responsible Personnel:
Environmental Management – Air Quality Compliance Manager
University, Contractor, and Vendor 40 CFR 82, Subpart F Certified Technicians

Supporting Documents:
Refrigerant Management Plan
AQ-FORM-201

Work Instructions:

In the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration work must be performed in accordance with requirements in 40 CFR 82. No person shall knowingly release or dispose of any Class I (including halons) or Class II substances, or non-exempt substitutes including blends and mixtures into the environment.

Any person who could be reasonably expected to violate the integrity of the refrigerant circuit and release refrigerant to the environment during the maintenance, service, repair, or disposal of appliances must pass an EPA technician certification exam offered by an EPA approved technician certification program. A copy of all University employee technician certifications must be retained on file with the technician's specific Department. A copy must also be submitted to the AQCM. Employees of contractors and vendors must verify appropriate

technician certification to the University as part of the contract procurement process when the work is reasonably expected to violate the integrity of the appliance refrigerant circuit or when the work includes recycling or disposal of the appliance or refrigerant. Exception: *Use of a certified technician is not required* to evacuate a small appliance.

Maintenance of MVACs or MVAC-like Appliances (40 CFR 82 Subpart B, §82.156)

- All recovery and/or recycling equipment must be approved pursuant to §82.36 or §82.158(f), as appropriate.
- Recovery and/or recycling equipment must be used by a certified technician trained in accordance with §82.40. Records must be kept documenting the certification.
- All recovery and/or recycling equipment must be properly used, as defined at §82.32(e), in accordance with the manufacturer's directions unless such directions conflict with the requirements of the regulation.
- Any sale of any Class I or Class II substance that is suitable for use as a refrigerant in a motor vehicle air conditioner and that is in a container of less than 20 pounds of such refrigerant must verify that the purchaser is properly trained and certified under §82.40.
- Records must be kept of the name and address of any facility to which refrigerant is sent.
- Records required must be retained for a period of three years.
- All persons recovering refrigerant from MVACs for purposes of disposal of these appliances must evacuate the appliance in accordance with 40 CFR 82, Subpart B or reduce the system pressure to or below 102 mm of mercury vacuum.
- All persons recovering refrigerant from MVAC-like appliances for purposes of disposal of these appliances must evacuate the appliance in accordance with 40 CFR part 82, subpart B or reduce the system pressure to or below 102 mm of mercury vacuum.

Maintenance of Small Appliances (§82.156)

- Before opening a small appliance, refrigerant must be recovered using a certified recovery and/or recycling machine. The standards for equipment certification are located in 40 CFR 82.158(e).
- The required percentage of refrigerant evacuated from or vacuum level of the appliance is listed in 40 CFR 82.156(b). *Use of a certified technician is not required* to evacuate a small appliance.
- System-dependent equipment may not be used with appliances with a full charge of more than 15 pounds of refrigerant, unless the system-dependent equipment is permanently attached to the appliance as a pump-out unit.
- Appliances that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.
- All recovery and/or recycling equipment must be used in accordance with the manufacturer's directions unless such directions conflict with the requirements of the regulation.
- Refrigerant may be returned to the appliance or another appliance owned by the University without being recycled or reclaimed.

- Although the above evacuation conditions must be met, there are no record keeping requirements for the maintenance of small appliances.

Maintenance of appliances with greater than 5 lbs & less than 50 lbs refrigerant per circuit (§82.156)

- Before opening an appliance, refrigerant must be recovered using a certified recovery and/or recycling machine. The standards for equipment certification are located in 40 CFR 82.158 and includes requirements for oil changes.
- The required percentage of refrigerant evacuated from or vacuum level of the appliance is listed in 40 CFR 82.156 and *use of a certified technician is required* to evacuate an appliance of this size.
- System-dependent equipment may not be used with appliances with a full charge of more than 15 pounds of refrigerant, unless the system-dependent equipment is permanently attached to the appliance as a pump-out unit.
- Appliances that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.
- All recovery and/or recycling equipment must be used in accordance with the manufacturer's directions unless such directions conflict with the requirements of the regulation.
- Refrigerant may be returned to the appliance or another appliance owned by the University without being recycled or reclaimed.
- Although the above evacuations conditions must be met, there are no record keeping requirements for the maintenance of appliances with a full charge of up to 50 pounds per circuit.

Maintenance of appliances with 50 lbs or more of refrigerant per circuit (§82.156, §82.157)

- Before opening an appliance, refrigerant must be recovered using a certified recovery and/or recycling machine. The standards for equipment certification are located in 40 CFR 82.158 and includes requirements for oil changes.
- The required percentage of refrigerant evacuated from or vacuum level of the appliance is listed in 40 CFR 82.156 and *use of a certified technician is required* to evacuate an appliance of this size.
- System-dependent equipment may not be used with appliances with a full charge of more than 15 pounds of refrigerant, unless the system-dependent equipment is permanently attached to the appliance as a pump-out unit.
- Appliances that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.
- All recovery and/or recycling equipment must be used in accordance with the manufacturer's directions unless such directions conflict with the requirements of the regulation.
- Refrigerant may be returned to the appliance or another appliance owned by the University without being recycled or reclaimed.

- Information collected for a new appliance on AQ-FORM-101, must be kept until three years after appliance is retired.

Additional requirements for class I, class II, or a blend of class I and class II refrigerants:

- The AQCM must keep compiled leak records for appliances and submit a report to EPA of any appliance that leaked 125 percent or more of the full charge in a calendar year. The report is due by March 1 of the following year.
- All appliance maintenance records, EPA extension requests, and EPA retrofit/retirement plans must be maintained for three years.

- **AQ-FORM-201, Section I - Add/Remove Refrigerant:**
    - Complete AQ-FORM-201, Section I whenever refrigerant is added or removed from an appliance with a capacity of 50 pounds or more of refrigerant per circuit. University certified technicians must complete the form and submit to the AQCM. Contractors, vendors, or departments/buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics, must complete the form and submit to the AQCM. The AQCM will enter data into SPHERA. Note, if refrigerant is added immediately following a retrofit, installation of a new appliance, part of a seasonal variance, or refrigerant is not a class I, class II, or a blend of class I and class II refrigerants, the leak rate calculation of Section I is not required. Records of seasonal variance and destroyed purged refrigerant are tracked to exclude from the leak rate calculation. The University uses the Annualizing Method to determine leak rate. This method allows for repairing leaks so the rate falls below the limit but does not require the repair of all leaks as the Rolling Average method. Note, the first time destroyed purged refrigerants are excluded from the leak rate calculation, the information on purged refrigerants must be submitted to EPA within 60 days.
    - If the leak rate exceeds 20% for a commercial refrigeration appliance or 10% for comforting cooling or other appliances, the leak must be repaired, retrofitted, or retired and Section II or III must be completed. Note, all timeframes are suspended if the appliance is mothballed and resume the day additional refrigerant is added. The leak rate is only required if the appliance contains class I, class II, or a blend of class I and class II refrigerants.

- **AQ-FORM-201, Section II - Identify and Repair Leaks:**
  (applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants)
    - Complete AQ-FORM-201, Section II whenever repairing an appliance above the allowable leak rate. A leak inspection of the appliance must first be completed by a certified technician. University certified technicians must complete the form and submit to the AQCM or enter the required data into SAP. Contractors, vendors, or departments/buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics, must complete the form and submit to the AQCM. The AQCM will enter data into SPHERA.

- For all leaks repaired, conduct initial and follow-up verification tests. As previously noted in Section I, not all leaks must be repaired but enough repairs must be completed in order to reduce the leak rate below the allowable leak rate limit. Unless an EPA extension is requested, initial test(s) must be completed within 30 days and demonstrate repaired leak(s) are successfully repaired. If repair does not open or evacuate the appliance, the initial test(s) must be performed after the repair and before additional refrigerant is added. If repairs require evacuation of the appliance, the initial test(s) must be performed before adding refrigerant. After completion of successful initial test, follow-up verification test(s) must be conducted within 10 days of the initial test or 10 days of reaching normal operating conditions. Leaks are presumed as repaired if no refrigerant is added for 12 months after the repair *or* the annual leak inspection does not find any leaks. However, the leak rate cannot be demonstrated until the next addition of refrigerant and a leak rate calculation indicates the leak rate is not above the allowable.
- Extension for repairs are permitted if one of the extension requests on Section II is met. Extensions must be coordinated through the AQCM for submission to EPA within the 30-day leak rate timeframe.
- If repairs are not successful in the leak rate timeframe or requested extension, a plan to retrofit or retire must be submitted to EPA.

- **AQ-FORM-201, Section III – Retrofit/Retire:**
  (applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants)
  - Complete AQ-FORM-201, Section III whenever retrofitting or retiring an appliance above the leak rate. Retrofits or retirements must be coordinated through the AQCM for submission to EPA within the 30-day leak rate timeframe. A plan must be submitted at any time the University intends to retrofit or retire rather than repair the leak; if the appliance exceeds the leak rate and the University fails to take any action to identify or repair the leak; or an appliance continues to leak above the applicable leak rate after having conducted the required repairs and verification tests. University staff, contractors, or vendors must complete the form and submit to the AQCM. The AQCM must prepare a plan for signature by the University responsible official based on the information provided.
  - The University may request that EPA relieve it of the obligation to retrofit or retire an appliance if it can be established within 180 days of the plan's date that the appliance no longer exceeds the applicable leak rate and the University agrees in writing to repair ***all*** identified leaks within one year of the plan's date. University staff, contractors, or vendors must complete the form and submit to the AQCM. The AQCM must prepare a relief request for signature by the University responsible official based on the information provided.
  - The retrofit or retirement schedule cannot exceed one year unless an extension request is submitted to EPA with seven months of exceeding the leak rate. University staff, contractors, or vendors must complete the form and submit to

the AQCM. The AQCM must prepare an extension request for signature by the University responsible official based on the information provided. Note, although unlikely, the schedule to retire an appliance is automatically 18 months if the replacement uses a substitute refrigerant exempted in §52.154(a).