230500 COMMON WORK RESULTS FOR HVAC, REFRIGERANT MANAGEMENT

Part 1 GENERAL INFORMATION AND PURPOSE

1.01 UNIVERSITY OF KENTUCKY REFRIGERANT MANAGEMENT PLAN (RMP)

1. The purpose of the University of Kentucky's Refrigerant Management Plan (RMP) is to establish the institutional framework necessary for the University to comply with Title VI of the Clean Air Act (CAA), Stratospheric Ozone Protection. The U.S. Environmental Protection Agency (EPA) developed specific regulations contained in 40 CFR 82, Protection of Stratospheric Ozone, to comply with the CAA. Although there are multiple subparts to regulation 40 CFR 82, the University is subject to 40 CFR 82, Subpart B, Servicing of Motor Vehicle Air Conditioners; 40 CFR 82, Subpart F, Recycling and Emissions Reduction; and 40 CFR 82, Subpart H, Halon Emissions Reduction. These regulations establish requirements for the service, maintenance, repair, and disposal of appliances containing ozone depleting substances (ODS) or non-ODS substances.

2. Appliances that contain ODS or non-ODS substances (refrigerants) throughout the University include air conditioners, refrigerators/freezers, HVAC, chilled water fountains, chillers, motor vehicles, and in the case of halons, fire and explosion protection equipment. The University requires all employees, contractors, or vendors that handle, order, service, maintain, repair, or dispose of refrigerants, refrigerant appliances, or halons to comply with this program.

Part 2 REQUIREMENTS

1. Ensure refrigerants are not knowingly released or disposed of during installation, maintenance, service, repair, disposal, or recovery.

2. Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.

3. Provide Environmental Management Department, **Air Quality Compliance Manager (AQCM)**, with copies of technician's certifications that conducted installation, maintenance, or removal of appliance.

4. Complete and submit form AQ-FORM-101 to AQCM when installing refrigerant appliances, other than small appliances.

5. Complete and submit form AQ-FORM-201 or AQ-FORM-301 to AQCM when conducting maintenance/service/repair on appliances containing 50 pounds or more of class I, class II, or a blend of class I and class II refrigerant per circuit.

6. Complete and submit form AQ-FORM-401 to AQCM when disposing of appliances with more than 5 pounds of refrigerant per circuit.

Part 3 FORMS

1. **AQ-FORM-101, New Refrigerant Appliance (pg. 2-3)**

2. **AQ-FORM-201, Maintenance of Refrigerant Appliance (pg. 6-12)**

3. **AQ-FORM-301, Leak Inspect-Detect Refrigerant Appliance (pg. 19)**

4. **AQ-FORM-401, Disposal of Refrigerant Appliance (pg. 22-23)**

Environmental Management

AQ-FORM-101

FORM

NEW REFRIGERANT APPLIANCE

Provider Information	
Contact Name:	
Contact Position:	
Email:	Phone:
Contractor/Vendor:	
Contractor/Vendor Contact:	
Email:	Phone:
Appliance Location	
County:	
Building Address:	
Building Name: if applicable	
Building Number: if applicable	
Specific Location: (i.e., room #, roof, ground, basement)	
Appliance Characteristics	
Manufacturer:	Mfg. Date:
Model #:	Serial #:
Date Installed:	Refrigerant(s) Name:
Appliance Type: (i.e., split system, chiller, reach-in cooler, heat pump)	

Total Number of Refrigerant Circuits:						
Individual Circuit Identification Name, Number, or Description: (more than 6 circuits, use separate sheet)						
Refrigerant Full Charge per Circuit: Lbs. and Oz.						
Category Code per Circuit: (1) ≤5 lb; (2) >5 & <50 lb; (3) ≥50 lb						
Method Used to Determine Refrigerant Full Charge Code: (1) Manufacturer Data; (2) Calculated; (3) Measured; (4) Midpoint Range						
Is this a revision to the full charge: [Y / N] If yes, explain how the revision was determined: Date revision occurred:						
Appliance monitored by an Automatic Leak Detection System. [Y / N] System meets the regulatory definition of an Automatic Leak Detection System: [Y / N] If Yes, Date system installed: [ ] Directly detects refrigerants [ ] Indirectly detects refrigerants And [ ] Monitors entire appliance [ ] Monitors a portion of the appliance						

Environmental Management

AQ-WI-101

WORK INSTRUCTIONS

NEW REFRIGERANT APPLIANCE

Reference Procedure:
AQ-PROC-100

Purpose:
The purpose of these instructions is to collect and maintain required data from a new appliance (or existing appliance not previously inventoried) contained on form AQ-FORM-101 and either enter or supply the data to be entered in SAP (where available on Lexington campus) or submitted to AQCM for submittal into SPHERA to maintain inventory records.

Scope:
The instructions apply to all University employees, contractors, and vendors that install or maintain refrigerant appliances, other than small appliances. A small appliance is one which contains equal to or less than 5 pounds of refrigerant per circuit.

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

Supporting Documents:
AQ-FORM-101

Work Instructions:

1. University staff that enter new appliance information into the SAP tracking system must collect the information on form AQ-FORM-101. Use of the actual form is not required as long as the data is entered in SAP.
2. Departments or buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics must complete form AQ-FORM-101 and submit to the AQCM whenever installing new appliances. The AQCM will enter the information into the SPHERA refrigerant software.
3. Contractors and vendors must complete form AQ-FORM-101 whenever installing new appliances and submit to University staff for entry into SAP. For University property not maintained through SAP, the form must be submitted to the Department or building operator, which must forward the information to the AQCM.
4. The AQCM must run weekly reports from SAP to retrieve new equipment to add into SPHERA.

5. As appliances are added into SAP and SPHERA, an appliance identification number will be assigned and future work or disposal will rely on that identifier to manage the appliance.
6. All records, EPA requests, and reports must be maintained for three years. Additionally, the information collected for a new appliance on AQ-FORM-101, must be kept until three years after appliance is retired.

Environmental Management

AQ-FORM-201

FORM

MAINTENANCE OF REFRIGERANT APPLIANCE

SECTION I

Maintenance/Service/Repair - Appliance 50 lbs or greater refrigerant per circuit.

If not University technician, contractor/vendor must complete.

SAP or SPHERA ID #: Circuit #:

If SAP or SPHERA ID # is unknown, complete and attach form AQ-FORM-101

Date of Maintenance/Service/Repair:

Maintenance/Service/Repair due to automatic leak detection equipment: [Y / N]

Part(s) of appliance being Maintenance/Serviced/Repaired:

Type of Maintenance/Service/Repair for each part(s):

Certified Technician Name:
Contractor/Vendor Contact/Email:

Accidental release of refrigerant [Y / N]
If yes, estimated amount released. _____lbs. _____oz.

REFRIGERANT EVACUATED

Refrigerant evacuated: [Y / N] Date Refrigerant Evacuated:
Quantity of refrigerant evacuated: _____lbs. _____oz.

Refrigerant evacuated to required levels using certified recovery equipment. [Y / N]

Seasonal Variance:
Refrigerant evacuated due to a Seasonal Variance. [Y / N]

Quantity of refrigerant removed in above Seasonal Variance: _____lbs. _____oz.

Purged Refrigerant:

Is refrigerant being excluded from leak rate calculation: [Y / N]

If Yes,

Refrigerant purged and destroyed to at least 98% efficiency (attach record). [Y / N]
Start and end time(s) of purge flow:
Flow rate:
Quantity of refrigerant removed: _____lbs. _____oz.

Contractor/Vendor that destroyed purged refrigerant:
Contractor/Vendor Contact address:
Contractor/Vendor Email/telephone number:
Description of purging equipment:

Description of method used to determine quantity of refrigerant sent for destruction:

Frequency of monitoring/data-recording:

Description of control device and destruction efficiency:

REFRIGERANT ADDED

Refrigerant added to appliance: [Y / N] Date Refrigerant added:

Was refrigerant added due to a Seasonal variance: [Y / N]

Quantity of refrigerant added in above Seasonal Variance: _____lbs. _____oz.

Date refrigerant was removed due to above Seasonal Variance:

Quantity of refrigerant removed in last Seasonal Variance: _____lbs. _____oz.

Refrigerant Name(s):	Quantity of Refrigerant(s) Added: _____lbs. _____oz. Net Quantity of Refrigerant(s) Added (addition minus seasonal variance, purged, and/or evacuated): _____lbs. _____oz.

Prior date refrigerant added to appliance
due to Maintenance/Service/Repair:

For appliances that contain class I, class II, or a blend of class I and class II refrigerants, a leak rate calculation must be performed when refrigerant is added which is not part of a seasonal variance or a purge where refrigerant was destroying.

Leak Rate = (% / yr) $\frac{\text{lbs net refrigerant added}}{\text{lbs refrigerant in full charge}} \times \frac{\text{365 days/yr}}{\text{shorter of: \# days since refrigerant last added or 365}} \times 100\%$

Leak Rate: _____

If leak rate exceeds 20% for commercial refrigeration or 10% for comfort cooling or other types,
Action* Taken After Leak Rate Exceedance:
[ ] Repair [ ] Repair and Request EPA Extension
[ ] Retire/Retrofit [ ] Retire/Retrofit and Request EPA Extension
[ ] Mothball

If Mothballed, date refrigerant was removed:
If Mothballed, date refrigerant was added:
If mothballed, actions are suspended until refrigerant is added.

One of the above actions* must be taken once a leak rate is exceeded and Section II or III must be completed, as appropriate.

SECTION II

(Applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants)

Appliance Leak Repair:

Leak Inspection and Initial Verification Tests (IVT) must be completed within 30 days of refrigerant added and Follow-up verification must be completed within 10 days of IVT or normal operating conditions unless EPA extension submitted. An extension must be submitted within the 30-day timeframe.

If not University technician, contractor/vendor must complete.

LEAK INSPECTION
Leak Inspection Date: Certified Technician Name: Contractor/Vendor Contact/Email:
Method(s) used to conduct leak inspection (i.e., ultrasonic tests, gas-imaging cameras, bubble tests, leak detection device):
Method(s) used to determine appliance is leaking (i.e., standing pressure/vacuum decay, sight glass checks, viewing receiver levels, pressure checks, charging charts):
Location of Each Leak:
All visible and accessible parts of appliance were inspected. [Y / N]

INITIAL VERIFICATION TESTS
Initial Verification Test(s) Date: Certified Technician Name: Contractor/Vendor Contact/Email:
Location of Each Repaired Leak:
Method(s) of Initial Verification Test(s), (i.e., standing pressure/vacuum decay, sight glass checks, viewing receiver levels, pressure checks, charging charts):
Result of Initial Verification Test(s):

FOLLOW-UP VERIFICATION TESTS
Follow-up Verification Test(s) Date: Certified Technician Name: Contractor/Vendor Contact/Email:
Location of Each Repaired Leak:
Method(s) of Follow-up Verification Test(s), (i.e., standing pressure/vacuum decay, sight glass checks, viewing receiver levels, pressure checks, charging charts):
Result of Follow-up Verification Test(s):

EXTENSION REQUEST FOR REPAIR
Appliance repair and verification tests not possible within 30 days due to: [ ] Appliance is located in an area subject to radiological contamination or shutting down appliance would lead to radiological contamination. Additional time permitted to the extent needed to complete repair in a safe working environment. [ ] Other Federal, state, or local regulations make repair impossible. Additional time permitted to the extent needed to comply with pertinent regulations. [ ] Replacement components for repair are not available. Additional time permitted up to 30 days after receiving delivery of necessary components, not to exceed 180 days from the data appliance exceeded the leak rate.
Description and date of any repair work performed prior to extension request:
Description of why more than 30 days are needed for repair:
Estimated date of Completion:

SECTION III

(Applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants)

Appliance Retrofit or Retire:

A plan must be completed within 30 days of refrigerant added when no action to identify/repair leak occurred or leak is exceeded after repairs/verification tests. Schedule to retire/retrofit not to exceed one year after plan created unless EPA extension granted. An extension must be submitted within 7 months after leak rate was exceeded.

Appliance Retired [Y / N]	Appliance Retrofit [Y / N]

RETROFIT

Converted Refrigerant Name(s):	Full Charge of Refrigerant(s): _____lbs. _____oz.

Itemized changes to appliance for compatibility with new refrigerant:

Plan for disposing of recovered refrigerant:

Identification of all appliance leaks:

All appliance leaks must be repaired for retrofit. Use Section II to identify leaks and repairs.

Retrofit Schedule:

RETIRE

Plan for disposing of recovered refrigerant:

Plan for disposal of appliance:

Retire Schedule:

RETROFIT/RETIRE EXTENSION REQUEST
Description and date of any repair work performed prior to extension request:
Detailed plan to complete retirement/retrofit:
Description of why more than one-year is needed:
Estimated date of completion:
RETROFIT/RETIRE RELIEF REQUEST
Trigger date of retrofit/retire: Attach associated AQ-FORM-201, Section I and II
Description of completed repairs:
Description of incomplete repairs:
Description of why repairs were not completed within 30-days or within extension date:
Date when all repairs will be completed:

Environmental Management

AQ-WI-201

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.

- 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 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).

AQ-FORM-301

Environmental Management

FORM

ANNUAL LEAK INSPECTION/AUTOMATIC LEAK DETECTION SYSTEM – REFRIGERANT APPLIANCE

SECTION I **Annual Leak Inspection - Appliance 50 lbs or greater class I, class II, or a blend of class I and class II refrigerants per circuit, where leak rate was exceeded.** **If not University technician, contractor/vendor must complete.**
SAP or SPHERA ID #: If SAP or SPHERA ID # is unknown, complete and attach form AQ-FORM-101
Last date leak rate was exceeded: Leak Inspection Date: Certified Technician Name: Contractor/Vendor Contact/Email:
Method(s) used to conduct leak inspection (i.e., ultrasonic tests, gas-imaging cameras, bubble tests, leak detection device):
Method(s) used to determine appliance is leaking (i.e., standing pressure/vacuum decay, sight glass checks, viewing receiver levels, pressure checks, charging charts):
Location of Each Leak:
All visible and accessible parts of appliance were inspected. [Y / N]
SECTION II **Automatic Leak Detection System - Appliance 50 lbs or greater class I, class II, or a blend of class I and class II refrigerants per circuit.** **If not University technician, contractor/vendor must complete.**
Date Automatic Leak Detection System audited or calibrated: Leak detection date: Location of each leak:

Environmental Management

AQ-WI-301

WORK INSTRUCTIONS

ANNUAL LEAK INSPECTION/AUTOMATIC LEAK DETECTION SYSTEM – REFRIGERANT APPLIANCE

Reference Procedure:
AQ-PROC-300

Purpose:
The purpose of these instructions is to collect and retain required data on AQ-FORM-301 from the annual leak inspections or automatic leak detection systems of refrigerant appliances which contains 50 pounds or more of class I, class II, or a blend of class I and class II refrigerants per circuit and where the appliance exceeded the allowable leak rate threshold. AQ-FORM-301 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

Regulatory Reference:
40 CFR 82.157(g)

Supporting Documents:
Refrigerant Management Plan
AQ-FORM-301

Work Instructions:

- As new appliances were added into SAP and SPHERA, an appliance identification number was assigned. The leak inspections of an appliance should be identified by that number. If the number is unknown, please contact the AQCM. Additionally, use of an automatic leak detection system was identified when the appliance was initially inventoried. An annual leak inspection is required for an appliance with 50 or more of class I, class II, or a blend of class I and class II refrigerants per circuit that exceeds the leak rate. An annual leak inspection is mandatory until it is shown through leak rate

calculations that the appliance hasn't exceeded the leak rate limit for one year. However, an annual inspection is not required if the appliance is monitored by an automatic leak detection system that is annually calibrated or audited and meets the operating requirements of the regulation.

- University staff that enter appliance information into the SAP tracking system must collect the information on form AQ-FORM-301. Use of the actual form is not required as long as the data is entered in SAP.
- Departments or buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics must complete form AQ-FORM-301 and submit to the AQCM of EMD whenever an annual inspection is conducted or a leak detection system indicates a leak. The AQCM will enter the information into the SPHERA refrigerant software.
- Contractors and vendors must complete form AQ-FORM-301 whenever an annual inspection is conducted or a leak detection system indicates a leak and submit to University staff for entry into SAP. For University property not maintained through SAP, the form must be submitted to the Department or building operator, which must forward the information to the AQCM.
- The AQCM will run weekly reports from SAP to retrieve records of equipment to add into SPHERA.
- Records must be kept for three years.

Environmental Management

AQ-FORM-401

FORM

DISPOSAL OF REFRIGERANT APPLIANCE

Complete Section I, Section II OR Section III

SECTION I **Appliance charge greater than 5 lbs and less than 50 lbs refrigerant per circuit. Refrigerant not evacuated by University technician. For appliances of this size, if contractor/vendor evacuated refrigerant, the University needs only the removal date of appliance and processor.**
SAP or SPHERA ID #: If SAP or SPHERA ID # is unknown, complete and attach form AQ-FORM-101
Appliance Disposal Date:
Disposal Processor Company: Contact Name: Contact Email:
SECTION II **Appliance charge greater than 5 lbs and less than 50 lbs refrigerant per circuit and refrigerant evacuated by University technician.**
SAP or SPHERA ID #: If SAP or SPHERA ID # is unknown, complete and attach form AQ-FORM-101
Appliance Location:

Appliance Disposal Date:	Refrigerant Recovery Date:
Refrigerant Name(s):	Quantity of Refrigerant(s) Recovered: _____lbs. _____oz.

Certified Technician Name: Refrigerant evacuated to required levels using certified recovery equipment. [Y / N]
Accidental release of refrigerant [Y / N] If yes, estimated amount released. _____lbs. _____oz.
Type of Refrigerant Disposal: [ ] Reclaimed [ ] Destruction [ ] Reused [ ] Recycled [ ] Other, Explain

Part(s) of appliance Disposed: [ ] Entire Appliance [ ] Other, Explain
Refrigerant transferred for reclamation [Y / N] If yes, Company that received refrigerant: Company contact name and email: Refrigerant Name(s) sent for reclamation: Quantity of refrigerant(s) sent for reclamation:
Refrigerant transferred for destruction [Y / N] If yes, Company that received refrigerant: Company contact name and email: Refrigerant Name(s) sent for destruction: Quantity of refrigerant(s) sent for destruction:
SECTION III **Appliance charge of 50 lbs or more refrigerant per circuit, not part of a retirement plan due to leaks above leak rate allowable.** **If not University technician, contractor/vendor must provide.**
SAP or SPHERA ID #: If SAP or SPHERA ID # is unknown, complete and attach form AQ-FORM-101
Appliance Location:

Appliance Disposal Date:	Refrigerant Recovery Date:
Refrigerant Name(s):	Quantity of Refrigerant(s) Recovered: _____lbs. _____oz.

Certified Technician Name: Contractor/Vendor: Contact Name: Contact Email: Refrigerant evacuated to required levels using certified recovery equipment. [Y / N]
Accidental release of refrigerant [Y / N] If yes, estimated amount released. _____lbs. _____oz.
Type of Refrigerant Disposal: [ ] Reclaimed [ ] Destruction [ ] Reused [ ] Recycled [ ] Other, Explain
Part(s) of appliance Disposed: [ ] Entire Appliance [ ] Other, Explain

Environmental Management

AQ-WI-401

WORK INSTRUCTIONS

DISPOSAL OF REFRIGERANT APPLIANCE

Reference Procedure:
AQ-PROC-400

Purpose:
The purpose of these instructions is to properly document refrigerant evacuated from appliances before the appliance is disposed to demonstrate compliance with 40 CFR 82.155, *Safe disposal of appliances*; 40 CFR 82.156, *Proper evacuation of refrigerant from appliances*; and 40 CFR 82.175, *Appliance maintenance and leak repair.* To meet those requirements, data from the disposal of an appliance must be collected and maintained on form AQ-FORM-401 and either enter or supply the data to be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Scope:
These instructions apply to all University employees, contractors, and vendors that dispose of 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-401

Work Instructions:

- As new appliances were added into SAP and SPHERA, an appliance identification number was assigned. The disposal of an appliance should be identified by that number. If the number is unknown, please contact the AQCM.
- The requirements for appliance disposal are the responsibility of the final processor unless the supplier to the final processor verifies that the refrigerant has been recovered in compliance with the regulation. The University is not the final processor, i.e., the person taking the final step in the disposal process such as a scrap recycler or landfill operator. In the event that an appliances refrigerant leaked out, a vendor or contractor acting as a final processor will require a signed statement/contract from the

- University that any refrigerant leaked out due to system failure, accidents, or other unavoidable occurrences. If the University recovers refrigerant from the appliance before disposal, the contractor/vendor will require a statement or contract that the University followed the evacuations procedures of 40 CFR 82.155. All contractors or vendors that receive appliances with refrigerant intact from the University must adhere to the disposal and evacuation requirements of the regulation. Refer to additional information which follows.
- With the exception of contractor agreements for demolition, disposal of all refrigerant appliances, other than small appliances, MVAC, or MVAC-like appliances in Fayette County or appliances purchased with University funds, should be sent to Facilities Services Recycling through Surplus Properties, provided Surplus Properties was unable to place the appliance. Appliances are then collected by Environmental Recycling Company for refrigerant evacuation and disposal. All other University owned properties must work with a contractor or vendor to evacuate the refrigerant detailed in the specific procedures which follow before final disposal. At no time should appliances containing refrigerant be finally disposed with the refrigerant still intact.

Disposal of Small Appliances, MVAC, or MVAC-like appliances (§82.155)

- Before final disposal of 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(e) – 40 CFR 158(g). If the appliance contains refrigerant at the time of disposal, the disposal contract must require the final processor to remove remaining refrigerant in accordance with 40 CFR 82. If the refrigerant leaked out prior to disposal, provide the final processor with a signed statement indicating the leak. If the refrigerant was recovered prior to disposal, provide the final processor with a signed statement which includes the date the refrigerant was recovered and the name and address of the person recovering the refrigerant.
- The requirements for percentage of refrigerant recovery or vacuum level of the appliance are listed in 40 CFR 82.156(b) – 40 CFR 82.156(d), 40 CFR 156(g), and 40 CFR 156(h). Use of a certified technician is not required.
- It is the responsibility of the final processor to keep a copy of applicable signed statements or contracts for three years.

Disposal of appliance with greater than 5 lbs & less than 50 lbs refrigerant per circuit (when contractor/vendor certified technician evacuates appliance) (§82.155, §82.156)

- It is the responsibility of contractors and vendors that evacuate appliances for disposal to maintain the recordkeeping requirements of evacuation. Section I of form AQ-FORM-401 must be completed and submitted to the AQCM. The disposal contract must require that the Contractor/Vendor adhere to all requirements of 40 CFR 82.
- The AQCM will update SPHERA and contract the appropriate University staff to update SAP of the removal.

Disposal of appliance with greater than 5 lbs & less than 50 lbs refrigerant per circuit (when University certified technician evacuates the appliance) *or*

Disposal of appliance with 50 lbs or more refrigerant per circuit that is not part of a retirement plan due to leaks above leak rate allowable (§82.156, §82.157)

- Before disposal of 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.
- 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.
- 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.
- University certified technicians that update appliance information into the SAP tracking system must collect the disposal information on appropriate Section II or Section III of form AQ-FORM-401 for appliances where the technician evacuated the appliance. Use of the actual form is not required as long as the data is entered into SAP.
- For appliances with 50 pounds or more refrigerant per circuit where the evacuation was performed by a contractor/vendor, the contractor/vendor must provide the information on form AQ-FORM-401, Section III to the AQCM. The AQCM will update SPHERA and forward the information to University staff that update appliance information into SAP.
- Departments or buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics must complete form AQ-FORM-401, Section II or III and submit to the AQCM whenever an appliance is evacuated for disposal if a University certified technician performs the work. Section III must be submitted to the AQCM if a contractor/vendor is evacuating an appliance with 50 pounds or more of refrigerant per circuit. The AQCM will enter the information into the SPHERA refrigerant software.
- The AQCM will run weekly reports from SAP to retrieve disposal information of equipment to be entered into SPHERA.
- The AQCM must track monthly reports of total quantity of refrigerant, by type, recovered from the disposed appliances.
- The AQCM must track the monthly the quantity of refrigerant recovered, by type, and transferred for reclamation and/or destruction; the person to whom it is transferred, and the date of transfer.
- Disposal records must be kept for three years.

Part 4 WHERE TO SEND FORMS

UK Environmental Management Dept.
Air Quality Compliance Manager
355 Cooper Dr.
Lexington, KY 40506