

## 23 0500 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, and 40 CFR 84, Phasedown of Hydrofluorocarbons, to comply with the CAA. Although there are multiple subparts to these regulations, 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; 40 CFR 82, Subpart H, Halon Emissions Reduction; 40 CFR 84, Subpart B, Restrictions on the Use of Hydrofluorocarbons; and 40 CFR 84, Subpart C, Management of Regulated Substances. These regulations establish requirements for the service, maintenance, repair, and disposal of appliances containing ozone depleting substances (ODS) or non-ODS substances used as refrigerants.
2. Appliances that contain refrigerants throughout the University include air conditioners, refrigerators/freezers, HVAC, chilled water fountains, chillers, motor vehicles, and in the case of halons and hydrofluorocarbons, 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 Quality Management Department, **Air Quality Compliance Specialist (AQCS)**, with copies of technician's certifications that conducted installation, maintenance, or removal of appliances.
4. Complete and submit form AQ-FORM-101 to the AQCS when installing refrigerant appliances, other than small appliances.
5. Complete and submit form AQ-FORM-201 to the AQCS 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 OR 15 pounds or more of an HFC, a blend containing an HFC, or a substitute with a GWP greater than 53.
6. Complete and submit form AQ-FORM-401 to the AQCS when disposing of appliances with more than 5 pounds of refrigerant per circuit OR for the disposal of disposable HFC cylinders.

### Part 3 FORMS

1. **AQ-FORM-101, Installation of Refrigerant-Containing Appliances (pg. 2)**
2. **AQ-FORM-201, Maintenance of Refrigerant-Containing Appliances (pg. 4-6)**
3. **AQ-FORM-401, Disposal of Refrigerant-Containing Appliances/HFC Cylinders (pg. 11-12)**

**University of Kentucky – Required Form for  
Installation of Refrigerant-Containing Appliances (AQ-FORM-101)**

**SECTION I – Technician Information (EPA Certified Technician when charged)**

UK Contact Name:	Position & Department:
Email:	Phone:
Installing Contractor/Vendor:	EPA Certified Technician Name/ID:
Email:	Phone:

**SECTION II - Appliance Location**

Building Address:	Building Name:
Building Number:	Specific Location (i.e., room #, roof, ground):

**SECTION III - Appliance Details**

Manufacturer:	Mfg. Date: ___/___/_____
Model #:	Serial #:
Installed By:	Appliance Type (i.e., split system, chiller):
Date Installed: ___/___/_____	Date Full Charge Established: ___/___/_____
UK Refrigerant Cylinder ID (if applicable):	Refrigerant removed from cylinder (if applicable): _____ lbs. _____ oz.
Refrigerant Name(s):	Total Number of Refrigerant Circuits:
Individual Circuit Name, Number, or Description: (more than 3 circuits, use separate sheet)	
Refrigerant Full Charge per Circuit: Lbs and Oz	
Method Used to Determine Full Charge: (1) Manufacturer Data; (2) Calculated; (3) Measured; (4) Midpoint Range	
Is this a revision to the full charge: [ Y / N ]      Date revision occurred: ___/___/_____	
Explain how the revision was determined:	
Monitored by an Automatic Leak Detection System [ Y / N ]	
Date system installed: ___/___/_____	
[ ] Directly detects refrigerant      [ ] Indirectly detects refrigerant	
And	
[ ] Monitors entire appliance      [ ] Monitors a portion of the appliance	

Submit completed form to Air Quality Compliance Specialist, Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu)

## University of Kentucky – Work Instructions for Installation of Refrigerant-Containing Appliances (AQ-WI-101)

### Purpose

The purpose of these instructions is to define the EPA recordkeeping required on form AQ-FORM-101 for the installation of new refrigerant-containing appliances that contain more than 5 pounds of refrigerant per circuit.

### Scope

These instructions apply to all University employees, contractors, and vendors that install and/or initially charge new appliances (or an existing appliance not previously inventoried) which contain more than 5 pounds of refrigerant.

As appliances are installed, a University equipment identification number will be assigned, and future maintenance or disposal will rely on that identifier to manage the appliance.

### Responsible Personnel

Responsible personnel must follow these work instructions; complete form AQ-FORM-101; and submit the form to UK's Air Quality Compliance Specialist (AQCS), Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu). Responsible personnel include:

- The installer of the appliance.
- The EPA Certified Technician (40 CFR 82, Subpart F) that field-charged the appliance, if applicable.
- For an existing appliance not previously inventoried, the UK supervisor or their appointee in charge of operating the equipment.
- The AQCS in charge of entering records into the SPHERA refrigerant inventory system.

### Associated Standard Operating Procedure and Form

AQ-PROC-100 and AQ-FORM-101

### Work Instructions

**SECTION I – Technician Information** – either the UK employee or the contractor/vendor installing the equipment. The installer may need to submit an amended form if the appliance isn't charged at the time of the installation. If the unit is charged through a different company, the installer must obtain the refrigerant details once the unit is charged.

**SECTION II – Appliance Location** – refers to the UK building nomenclature.

**SECTION III – Appliance Details** – manufacturer information and the details regarding the charge capacity. As previously noted, not all information may be available at the time of installation. When this is the case, the installer is to submit the form at the time of installation and submit an amendment when the equipment is charged.

### Recordkeeping

- Form AQ-FORM-101 must be submitted to the AQCS.
- The AQCS enters new or existing appliance information into the University's refrigerant management system, SPHERA.
- The information on AQ-FORM-101 must be kept until five years after the appliance is retired.

**University of Kentucky – Required Form for Maintenance, Repair, and Leak Testing of Refrigerant -Containing Appliances (AQ-FORM-201)**
**SECTION I – Appliance and Technician Information**

University Equipment ID #: _____ <small>If unknown, complete and attach AQ-FORM-101</small>	Circuit #: _____
Accidental release of refrigerant: [ Y / N ] If yes, estimated amount released: _____ lbs. _____ oz.	
Date of Maintenance: ____/____/____ Maintenance due to automatic leak detection equipment: [ Y / N ] Date of last automatic leak detection equipment calibration (if applicable): ____/____/____	
Part(s) of appliance being serviced: _____	Type of maintenance for each part(s): _____
Contractor/Vendor: _____ EPA Certified Technician Name/ID: _____ Technician Email/Phone: _____	

**SECTION II – Appliance Leak Rate Calculation**

Circuit Full Charge: _____ lbs. _____ oz.	Refrigerant Name(s): _____
Refrigerant Evacuated: [ Y / N ] Date Refrigerant Evacuated: ____/____/____ Quantity Evacuated: _____ lbs. _____ oz.	Refrigerant Added: [ Y / N ] Date Refrigerant Added: ____/____/____ Quantity Added: _____ lbs. _____ oz.
UK Cylinder ID(s) : _____ <small>Note if vendor supplied</small>	UK Cylinder ID(s) : _____ <small>Note if vendor supplied</small>
Net refrigerant added (refrigerant added minus refrigerant evacuated): _____ lbs. _____ oz. Prior date refrigerant added due to maintenance: ____/____/____ Number of days between current refrigerant added data and prior added date: _____	
Leak Rate = $\frac{\text{net refrigerant added (lbs)}}{\text{refrigerant full charge (lbs)}} \times \frac{\text{365 days/year}}{\text{shorter of the number of days since refrigerant addition OR 365}} \times 100\%$	
Leak Rate: _____ % per year	
<b style="color: red;">If the leak rate exceeds 30% for industrial process refrigeration, 20% for commercial refrigeration, or 10% for comfort cooling or other refrigeration types, one of the following sections must be completed. Technicians will need to submit an amended form when the status changes:</b>	
SECTION III – Appliance Mothballed SECTION IV – Leak Repaired SECTION V – Appliance Retrofitted or Retired	

SECTION III – Appliance Mothball Requirements	
Date Mothballed: ___/___/___ 30-day repair timeframe suspended on this date Quantity Evacuated: _____ lbs. ___ oz. UK Cylinder ID(s) : Note if vendor supplied	Date Refrigerant Added: ___/___/___ 30-day repair timeframe continues – does not restart Quantity Added: _____ lbs. ___ oz. UK Cylinder ID(s) : Note if vendor supplied
SECTION VI – Leak Repair Requirements	
Leak Inspections	<u>Annual</u> Leak Inspection
Date(s) of Leak Inspection: ___/___/___  Submit all inspection dates done within the 30-day timeline	Date of Annual Leak Inspection: ___/___/___  Date of Last Leak Rate Exceeded: ___/___/___
Method(s) to determine appliance leak(s) (i.e. sight glass checks, viewing receiver levels, pressure checks):	Method(s) to determine if appliance is leaking (i.e. sight glass checks, viewing receiver levels, pressure checks):
Method(s) to conduct leak inspection (i.e. ultrasonic tests, bubble tests):	Method(s) to conduct leak inspection (i.e. ultrasonic tests, bubble tests):
Location of Each Leak:	Location of Each Leak:
All visible and accessible parts of appliance were inspected. [ Y / N ]	All visible and accessible parts of appliance were inspected. [ Y / N ]
<u>Initial</u> Verification Tests	<u>Follow-Up</u> Verification Test
Date(s) of Verification Test: ___/___/___  Submit all verification dates done within the 30-day timeline	Date of <u>Follow-Up</u> Verification Test: ___/___/___  Complete within 10 days of initial verification or return to normal operating condition
Method(s) to determine appliance leak(s) (i.e., sight glass checks, viewing receiver levels):	Method(s) to determine appliance leak(s) (i.e., sight glass checks, viewing receiver levels):
Result of Initial Verification Test(s):	Result of Follow-Up Test(s):

<b>SECTION V – Appliance Retrofit or Retire Requirements</b>	
<b>Retrofit</b>	<b>Retire</b>
Converted Refrigerant Name(s): Appliance Full Charge: _____ lbs. ____ oz.	Plan for disposing of recovered refrigerant:
Itemized changes to appliance for compatibility with new refrigerant:	
Plan for disposing of recovered refrigerant:	Plan for disposal of appliance:
Identification of all appliance leaks: All leaks must be repaired for retrofit.	
Retrofit Schedule:	Retirement Schedule:
<b>Extension Request</b>	<b>Relief Request</b>
Estimated date of completion: ___/___/___	Trigger date of retrofit/retire: ___/___/___
Description and date of any repair work performed prior to extension request:	Description of completed repairs:
Detailed plan to complete retirement/retrofit:	Description of incomplete repairs:
Description of why more than one-year is needed:	Description of why repairs were not completed within 30-days or within extension date:
	Date when all repairs will be completed: ___/___/___

Submit completed form to Air Quality Compliance Specialist, Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu)

## University of Kentucky – Work Instructions for Maintenance, Repair, and Leak Testing of Refrigerant-Containing Appliances (AQ-WI-201)

### Purpose

The purpose of these instructions is to describe the EPA maintenance, repair, leak testing, recordkeeping, and reporting requirements for refrigerant-containing appliances whenever refrigerant is added or removed from the appliance. This includes when form AQ-FORM-201 must be submitted.

### Scope

These instructions apply to all University employees, contractors, and vendors that perform maintenance, repairs, or leak testing on the types of appliances described in AQ-PROC-200, small appliances (*charge is less than or equal to 5 pounds of refrigerant per circuit*), or motor vehicle air conditioners (MVAC) or MVAC-like Appliances.

### Responsible Personnel

Responsible personnel must follow these work instructions; complete form AQ-FORM-201; and submit the form to UK's Air Quality Compliance Specialist (AQCS), Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu). Responsible personnel include:

- The EPA Certified Technician (40 CFR 82, Subpart F) that added or removed refrigerant from the appliance, repaired leaks, or tested for leaks. This includes the initial refrigerant charge.
- Technicians working on small refrigerant appliances where the full charge is less than or equal to 5 pounds of refrigerant per circuit.
- The AQCS in charge of the refrigerant tracking system, recordkeeping, and reporting to EPA.

### Associated Standard Operating Procedure and Form

AQ-PROC-200 and AQ-FORM-201

### Work Instructions

#### General Requirements for Maintenance of Refrigerant Appliances

- No person shall knowingly release or dispose of any refrigerant into the environment. Contact the AQCS immediately if this occurs.
- If maintenance could reasonably be expected to impact the integrity of a refrigerant circuit and release refrigerant to the environment, the work must be conducted by an EPA certified technician. Exception: *Use of a certified technician is not required to evacuate a small appliance (charge is less than or equal to 5 pounds of refrigerant per circuit).*
- Refrigerant may be returned to the same appliance or another appliance owned by the University without being recycled or reclaimed.
- Copies of all University employee technician certifications must be retained on file with the technician's specific Department and a copy submitted to the AQCS.
- Employees of contractors and vendors must supply technician certification to the AQCS.

#### Recovery and/or Recycling Equipment Requirements

- Must be used before opening an appliance.
- Must be certified in accordance with 40 CFR 82.36, 32.158(f), or 82.158(g) as appropriate.
- Proper operation per manufacturer's instructions is required unless the directions conflict with the requirements of the governing regulation.
- Appliances that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.

## Evacuation Requirements

- The required percentage of refrigerant evacuated or vacuum level that must be achieved is listed in 40 CFR 82.156.
- System-dependent equipment may not be used with appliances with a full charge of more than 15 pounds of refrigerant unless the 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.

## Maintenance Requirements of Appliances Described in AQ-PROC-200

Form AQ-FORM-201 must be completed for maintenance on these types of appliances. **Technicians must complete Sections I – V of AQ-FORM-201 as appropriate and submit it to the AQCS. The future of an appliance may not be known at the time of a leak rate calculation. Whenever work is performed or decisions made, the technician must submit an amended form to the AQCS.**

## Maintenance Requirements of Appliances Small Appliances

For appliances with less than or equal to 5 pounds of refrigerant per circuit and those not described in AQ-PROC-200, follow the general requirements for maintenance of refrigerant appliances. The technician does not need to be EPA certified and use of form AQ-FORM-201 is not required.

## Maintenance Requirements of Motor Vehicle Air Conditioners (MVAC) or MVAC-like Appliances

### Recovery and/or recycling equipment requirements

- Must be certified in accordance with 40 CFR 82.36, 82.158(f), or 82.158(g) as appropriate.
- Operated by an EPA certified MVAC technician (40 CFR 82.40).
- Proper operation per manufacturer's instructions is required unless the directions conflict with EPA requirements (40 CFR 82.32(e)).

### Recordkeeping requirements

- Records of the name and address of any facility to which refrigerant is sent must be maintained and retained for five years by the University seller. Form AQ-FORM-201 is not required.

## SECTION I – Appliance and Technician Information

EPA-certified technician completes this section when maintenance is performed.

## SECTION II – Appliance Leak Rate Calculation Requirement

Technician completes this section when refrigerant is removed from or added to an appliance.

- Whenever refrigerant is evacuated from an appliance, it must be recorded. Further, when refrigerant is added, the rate at which refrigerant leaked out of the unit must be calculated. **Contact the AQCS immediately if you need help calculating the leak rate.**
  - Note, if refrigerant is added immediately following a retrofit, due to installation of a new appliance, or as part of a seasonal variance, the leak rate calculation is not required. However, records of seasonal variance and destroyed purged refrigerant are tracked to exclude from the leak rate calculation. Contact the AQCS to provide this information.
- Appliances leaking over the allowable leak rate as listed below must have leaks repaired unless the appliance is retrofitted or retired:
  - 20% leak rate for commercial refrigerant equipment;
  - 30% leak rate for industrial process refrigeration equipment; or
  - 10% leak rate for comfort cooling appliances or other appliances not covered.

### SECTION III – Appliance Mothball Requirements

Technician completes and submits this section when a leak rate exceeds the allowable and the appliance is mothballed. Leaks must be inspected and repaired within 30 days of when refrigerant is added to an appliance. The time frame is temporarily suspended if an appliance is mothballed and resumes (not restarts) on the day additional refrigerant is added. If mothballed, the technician completes Sections I-III and submits it to the AQCS.

### SECTION IV – Leak Repair Requirements

Technician completes and submits when leak inspections, repairs, or verification tests are performed. The University uses the Annualizing Method to determine the leak rate. This method allows for repairing leaks so the rate falls below the limit but does not require the repair of all leaks.

#### Leak Inspections

- Leaks must be inspected and repaired within 30 days of when refrigerant is added to an appliance.
- Repairs must bring the leak rate below the allowable leak rate, which is confirmed using the leak rate calculation on AQ-FORM-201 the next time refrigerant is added. Leaks are considered repaired if no refrigerant is added for 12 months after the repair or an annual leak inspection does not find any leaks.

#### Initial Verification Tests Requirements for Leak Repairs

- An initial verification test of the repair must be performed within 30 days of exceeding the allowable leak rate.
- For repairs completed without opening or evacuating the appliance, the test must be performed after the conclusion of the repair(s) and before any additional refrigerant is added.
- For repairs that require the evacuation of the appliance or a portion of the appliance, the test must be performed before adding any refrigerant to the appliance.
- If the initial verification test indicates that repairs have not been successful, additional repairs and initial verification tests can be completed within the time period.
- An extension of the 30-day timeframe for leak inspections and verification tests must be requested from EPA; contact the AQCS immediately if this is needed. Extensions are only granted if the appliance is located in an area subject to radiological contamination; other Federal, state, or local regulations make repair impossible; or replacement components are unavailable.

#### Follow-up Verification Tests Requirements for Leak Repairs

- A follow-up verification test must be performed within 10 days of a successful initial verification test or 10 days of the appliance reaching normal operating characteristics and conditions.
- A follow-up verification test must demonstrate that leaks where a repair attempt was made are repaired. If the follow-up test indicates that the repairs were not successful, additional repairs and verification tests can be completed within the time period to verify the repairs.
- If the repair to the leak fails to bring the leak rate below the applicable leak rate, a retrofit or retirement plan must be created and implemented. Contact the AQCS if this is needed.
- Certified technician completes form AQ-FORM-201 and submits it to the AQCS.

#### Annual Leak Inspection Requirements

- An appliance that had a leak rate over the allowable leak rate, must have an annual leak inspection until it is shown through leak rate calculations that the appliance has not exceeded the leak rate for one year. 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. To use this exemption, contact the AQCS for details of the requirements before the annual inspection is due.

## SECTION V – Appliance Retrofit or Retirement Requirements

Technician completes and submits for an appliance retrofit or retirement plan.

- Retrofit or retirement plans must be created within 30 days of an appliance leaking above the allowable leak rate when:
  - The decision is made to retrofit or retire the appliance rather than repair the leak(s);
  - No actions are taken to identify or repair leak(s); or
  - The appliance continues to leak above the leak rate after the repairs and verification tests to repair the leak.
- The retrofit or retirement plan must be signed and dated by the responsible official and available for EPA inspection.
- All identified leaks must be repaired as part of any retrofit plan.
- Unless granted additional time, all work performed in the plan must be finished within one year of the plan's date (not to exceed 12 months).
- A request can be made to EPA to relieve the obligation to retrofit or retire the 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 responsible official agrees in writing to repair all identified leaks within one year of the plan's date. Contact the AQCS for specific requirements if this is needed.

## Recordkeeping and Reporting Requirements

- Maintenance records must be completed by the technician on AQ-FORM-201 and submitted to the AQCS.
- An appliance that leaks 125% or more of the full charge in a calendar year must be reported to EPA by March 1 of the following year. The AQCS will draft a report based on the leak rates provided by the technician.
- A justification for an extension beyond 30 days for initial verification tests must be submitted to EPA as soon as possible. Contact the AQCS immediately if this occurs.
- A plan for retrofit, retirement, or relief from both must be submitted to EPA within 30 days of a leak. Contact the AQCS immediately if this occurs.
- The AQCS updates the refrigerant tracking system and reports notices to EPA.
- All records must be maintained for five years.

University of Kentucky – Required Form for Disposal of Refrigerant-Containing Appliances;  
 HFC Fire Suppression Systems; or HFC Cylinders (AQ-FORM-401)

**SECTION I – Appliance or HFC Fire Suppression System Information**

University Equipment ID #: _____ <small style="color: red;">If unknown, complete and attach form AQ-FORM-101</small>	Appliance/System Disposal Date: ___/___/___
Appliance/System Location (Building name, number, specific location, i.e., room #, roof, ground) : _____	
Refrigerant Name(s): _____	Appliance/System Full Charge: _____ lbs. _____ oz.

**SECTION II – Appliance or HFC Fire Suppression System Disposal**

Part(s) of appliance disposed: <input type="checkbox"/> Entire Appliance <input type="checkbox"/> Other, Explain: _____
Refrigerant intact [ Y / N ]
All refrigerant leaked prior to disposal [ Y / N ] If yes, Responsible Person Name: _____ Responsible Person Address: _____ Responsible Person Signature: _____ Date: _____
Refrigerant evacuated before sent for final processing to required levels using certified recovery equipment. [ Y / N ] <b style="color: red;">If yes, complete below AND Section III</b> *Technician Name/EPA Certification ID: _____ *Technician Address: _____ *Technician Signature: _____ Date: _____ <small style="color: red;">*Technician must be EPA certified except for MVAC, MVAC-like, small appliances, and HFC fire suppression systems</small>
Refrigerant to be evacuated by the final processor in accordance with 40 CFR 82 and/or 40 CFR 84. [ Y / N ] If yes, Contractor/Vendor Name: _____ Contractor/Vendor Address: _____ Contractor/Vender Signature: _____ Date: _____

**SECTION III – Refrigerant Removal – Required for disposal of HFC fire suppression systems or if refrigerant is evacuated before an appliance is sent for final disposal**

Date of Refrigerant Removal: \_\_\_/\_\_\_/\_\_\_      Amount of refrigerant recovered: \_\_\_\_\_lbs. \_\_\_oz.

Type of Refrigerant Disposal:

 Reclaimed     Destruction     Reused     Recycled     Other, Explain:

**If reused, provide University cylinder ID:**

 Refrigerant transferred for reclamation  Y /  N ] or destruction  Y /  N ]

If yes, Date of transfer: \_\_\_/\_\_\_/\_\_\_

Company that received refrigerant:

Company contact name and email:

Refrigerant Name(s) sent for reclamation/destruction:

Quantity of refrigerant(s) sent for reclamation/destruction: \_\_\_\_\_lbs. \_\_\_oz.

**SECTION IV – Disposable HFC Cylinders**

Cylinder ID #:

Cylinder Storage Location:

Cylinder Disposal Date: \_\_\_/\_\_\_/\_\_\_

Refrigerant Name:

 Heel was removed by an EPA certified technician  Y /  N ]

 If yes, heel was evacuated to a vacuum of 15 inHg  Y /  N ]

Date cylinder was evacuated: \_\_\_/\_\_\_/\_\_\_

Certified Technician Name:

Contractor/Vendor:

Address:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

 Accidental release of refrigerant  Y /  N ]

If yes, estimated amount released. \_\_\_\_\_lbs. \_\_\_oz.

Cylinder sent to:

 Certified Reclaimer     Refrigerant Supplier     Recycler     Final Processor     Other, Explain:

Company that received disposable cylinder:

Company Contact name and email:

Contact phone number:

 Submit completed form to Air Quality Compliance Specialist, Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu)

## University of Kentucky – Work Instructions for Disposal of Refrigerant-Containing Appliances, HFC Fire Suppression Systems, or HFC Cylinders (AQ-WI-401)

### Purpose

The purpose of these instructions is to describe the EPA recordkeeping required on form AQ-FORM-401 for evacuation and disposal of refrigerant-containing appliances, HFC fire suppression systems, and disposable HFC cylinders.

### Scope

These instructions apply to all University employees, contractors, and vendors that dispose of refrigerant-containing appliances, HFC fire suppression systems, and disposable HFC cylinders.

### Responsible Personnel

Responsible personnel must follow the work instructions in AQ-WI-401; complete form AQ-FORM-401; and submit the form to UK's Air Quality Compliance Specialist (AQCS), Sarah Trumble, at [sarah.trumble@uky.edu](mailto:sarah.trumble@uky.edu).

Responsible personnel include:

- EPA Certified Technicians (40 CFR 82, Subpart F) that evacuate refrigerant from appliances greater than 5 pounds of refrigerant per circuit.
- Technicians that evacuate refrigerant from small appliances where the charge is less than or equal to 5 pounds of refrigerant per circuit.
- The AQCS in charge of the refrigerant tracking and recordkeeping system.

### Associated Standard Operating Procedure and Form

AQ-PROC-400 and AQ-FORM-401

### Work Instructions

#### General Requirements for Disposals

- No person shall knowingly release or dispose of any refrigerant into the environment. Contact the AQCS immediately if this occurs.
- Refrigerant evacuation is the responsibility of the final processor, i.e., the facility taking the final step in the disposal process such as a scrap recycler or landfill operator. The University is not considered the final processor.
- Recovery and/or recycling equipment must be certified and properly operated per manufacturer's instructions unless the directions conflict with the requirements of the regulation.
- All contractors or vendors that receive appliances or cylinders with refrigerant intact from the University must adhere to the disposal and evacuation requirements of 40 CFR 82 and/or 40 CFR 84.
- At no time should refrigerant-containing appliances or cylinders be finally disposed of with the refrigerant still intact. In the event an appliance's refrigerant leaked out before disposal or the University recovers refrigerant from the appliance before disposal, the final processor will require a signed statement/contract from the University.
- In Fayette County, all appliances or HFC cylinders not repurposed by Surplus Property, should be sent to Facilities Services Recycling and collected by Environmental Recycling Company for refrigerant evacuation and disposal. All other University properties must work with a contractor or vendor to evacuate appliances before final disposal.
- Copies of all University employee technician certifications must be retained on file with the technician's specific Department and a copy submitted to the AQCS.
- Employees of contractors and vendors must supply technician certification to the AQCS.

## Recovery and/or Recycling Equipment Requirements

- Recovery and/or recycling equipment must be used to evacuate appliances. The equipment must be certified and properly operated per manufacturer's instructions unless the directions conflict with the requirements of the regulation.
- Appliances that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.

## Evacuation Requirements

- The work must be conducted by an EPA certified technician.
- The required percentage of refrigerant evacuated or vacuum level that must be achieved is listed in 40 CFR 82.156 or 40 CFR 82.158 for MVAC or MVAC-like appliances.
- 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.

## Disposal of refrigerant-containing appliances, including MVAC or MVAC-like appliances

Sections I and II of form AQ-FORM-401 must be completed for disposal; Section III should also be completed if refrigerant is removed before final disposal.

Effective January 1, 2026, fire suppression equipment that uses an HFC must either have the HFC recovered before being sent for disposal or the equipment must be sent to a facility, such as a fire suppression equipment manufacturer, distributor, or fire suppressant recycler, if the HFC is left in the equipment.

## SECTION I – Appliance or HFC Fire Suppression System Information

Technician completes and submits this section when appliances are being disposed of. The technician must be an EPA certified technician unless the appliance contains less than or equal to 5 pounds of refrigerant per circuit, is an MVAC or MVAC-like appliance, or is an HFC fire suppression system.

## SECTION II – Appliance or HFC Fire Suppression System Disposal Requirements

Technician completes and submits this section to identify specifics about the disposal.

- If all refrigerant leaked out prior to disposal, the technician needs to obtain the signature of the responsible person, generally the area maintenance supervisor or general contractor.
- The technician or final processor signature is required for evacuation before final disposal.

## Special Conditions for HFC Fire Suppression Systems.

- Cross-contamination must be prevented.
  - Recovery, Storage, and/or Recycling Equipment must be evacuated prior to use to prevent contamination.
  - The recovered HFCs cannot be mixed with other HFCs that may be contained in similar cylinders.
- Recovered HFCs must be sent for recycling to a fire suppressant recycler or reclaimer certified under 40 CFR 82.164 or for its destruction using one of the controlled processes listed in 40 CFR 82.29.
- Wastes from the recycling process must be collected and properly disposed of.

## SECTION III – Refrigerant Removal before Final Disposal Requirements

Technician completes and submits this section when refrigerant is completely removed before final disposal or when an HFC fire suppression system is removed. If refrigerant is to be reused by the University, provide the University cylinder ID.

## SECTION IV – Disposal of HFC Cylinder Requirements

Effective January 1, 2028, there are additional requirements for disposable cylinders that contain an HFC used in the servicing, repair, or installation of refrigerant-containing appliances or fire suppression systems where the disposable cylinder will not be re-used in the future. This section must be completed and submitted by a technician to the AQCS.

### Disposal Requirements

Disposable cylinders must be sent to:

- A reclaimer certified under 40 CFR 82.164;
- A fire suppressant recycler if the disposable cylinder was used in the servicing, repair, or installation of fire suppression equipment;
- A refrigerant supplier (including but not limited to distributors and wholesalers) who is capable of removing the heel from disposable cylinders; or
- A final processor, such as a landfill operator or scrap metal recycler, who is capable of removing the heel from disposable cylinders. Disposable cylinders may be discarded to a final processor without meeting the above requirement when:
  - The heel was removed by a certified technician;
  - The heel of the used disposable cylinder has been evacuated to a vacuum of 15 inHg prior to discarding the cylinder;
  - The certified technician provides a certification statement, which certifies that the heel was evacuated to a vacuum of 15 inHg; states the name and address of the certified technician who evacuated the cylinder(s) and the date the cylinder(s) was/were evacuated; and is signed by the certified technician who evacuated the cylinder(s); and
  - The certified technician discarding the cylinder to the final processor provides the signed certification statement to the final processor when they discard the cylinder.

## Recordkeeping and Reporting Requirements

- Refrigerant-containing appliances, HFC fire suppression systems, and HFC disposable cylinders records of disposal must be completed by the technician on AQ-FORM-401 and submitted to the AQCS.
- The AQCS updates the refrigerant tracking system.
- All records must be maintained for five years.
- It is the responsibility of the final processor to keep a copy of applicable signed statements or contracts for three years.
- There are no reporting requirements.

### Part 4 **WHERE TO SEND FORMS**

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<b>REVISION DATE</b>	<b>PAGES</b>	<b>REMARKS</b>
October 2025	ALL	Updated process and record-keeping requirements