University of Kentucky

Environmental Management **Department**

Refrigerant Management Program

Environmental Management Department
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University of Kentucky Refrigerant Management Program
Table of Contents

Attachments

AQ-PROC-100	New Refrigerant Appliance
AQ-WI-101	New Refrigerant Appliance
AQ-FORM-101	New Refrigerant Appliance
AQ-PROC-200	Maintenance of Refrigerant Appliance
AQ-WI-201	Maintenance of Refrigerant Appliance
AQ-FORM-201	Maintenance of Refrigerant Appliance
AQ-PROC-300	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance
AQ-WI-301	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance
AQ-FORM-301	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance
AQ-PROC-400	Disposal of Refrigerant Appliance
AQ-WI-401	Disposal of Refrigerant Appliance
AQ-FORM-401	Disposal of Refrigerant Appliance

AQ Documents Control List

NUMBER	TITLE	REVISION NUMBER	REVISION DATE
AQ-PROC-100	New Refrigerant Appliance	0	
AQ-WI-101	New Refrigerant Appliance	0	
AQ-FORM-101	New Refrigerant Appliance	0	
AQ-PROC-200	Maintenance of Refrigerant Appliance	0	
AQ-WI-201	Maintenance of Refrigerant Appliance	0	
AQ-FORM-201	Maintenance of Refrigerant Appliance	0	
AQ-PROC-300	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance	0	
AQ-WI-301	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance	0	
AQ-FORM-301	Annual Leak Inspection/Automatic Leak Detection System – Refrigerant Appliance	0	
AQ-PROC-400	Disposal of Refrigerant Appliance	0	
AQ-WI-401	Disposal of Refrigerant Appliance	0	
AQ-FORM-401	Disposal of Refrigerant Appliance	0	

AQCM Approval: _____ Date: _____

Director Approval: _____ Date: _____

1.0 Introduction

1.1 Purpose

The purpose of the University of Kentucky's Refrigerant Management Program (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. The RMP was developed as a requirement of the University of Kentucky Administrative Regulation AR 6:3, *Environmental Health and Safety*, which mandates compliance with all applicable environmental, health, and safety laws and regulations.

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.

1.2 Scope

The program is applicable to all University owned and operated buildings that contain refrigerant appliances subject to 40 CFR 82, Subpart F. This includes University campuses, hospitals, and athletics. Buildings or appliances leased by the University are not included and are the responsibility of the lessor. Buildings or appliances located on University property that are not operated or maintained by University personnel and for which the University has no operational control, are not included within the program. Although the regulation identifies requirements for industrial process refrigeration equipment, such appliances were not addressed in the program since it is unlikely that the University would install and operate this equipment type. Similarly, the University does not currently own and operate commercial refrigeration equipment with a full charge of 50 pounds or more refrigerant, but since this scenario could more likely apply, operating requirements for commercial refrigeration with a full charge between 50 to 500 pounds were included. The installation of industrial refrigeration appliances or commercial appliances at 500 pounds or more refrigeration would require a revision to the program.

Additionally, motor vehicle air conditioners (MVAC) and MVAC-like appliances regulated under regulation 40 CFR 82, Subpart B and halon containing equipment regulated under 40 CFR 82, Subpart F are addressed in the program.

Program requirements are applicable to all persons, including University employees, contractors, or vendors that handle, order, service, maintain, repair, or dispose of refrigerants/halon or

refrigerant/halon appliances. This program defines regulated refrigerants under the most recently approved regulations in 40 CFR 82, revised March 11, 2020. The scope will be updated to reflect any future regulatory changes. The regulation applies to any person maintaining, servicing, or repairing appliances containing Class I, Class II, or non-exempt substitute refrigerants. The regulation also applies to persons disposing of such appliances, refrigerant reclaimers, appliance owners and operators, approved recovery and/or recycling equipment testing organizations, and persons buying, selling, or offering to sell Class I, Class II, or non-exempt substitute refrigerants. The RMP addresses requirements of Title VI of the CAA codified in 40 CFR 82 and does not include other regulatory requirements that may pertain to appliances containing refrigerants.

2.0 Definitions

The objective of this section is to provide commonly used definitions of the refrigerant regulations and is not considered an exhaustive list. Refer to 40 CFR 82 for additional definitions.

2.1 Refrigerant Recycling and Emissions Reduction

Appliance - Any device which contains and uses a Class I (CFC) or Class II (HCFC) substance or substitute as a refrigerant and is used for household or commercial purposes. For a system with multiple circuits, each independent circuit is considered a separate appliance.

Class I - An ozone-depleting substance that is listed in 40 CFR 82 Subpart A, Appendix A.

Class II - An ozone-depleting substance that is listed in 40 CFR 82 Subpart A, Appendix B.

Comfort cooling - The air-conditioning appliances used to provide cooling in order to control heat and/or humidity in occupied facilities including but not limited to residential, office, and commercial buildings. Comfort cooling appliances include but are not limited to chillers, commercial split systems, and packaged roof-top units.

Commercial refrigeration - The refrigeration appliances used in the retail food and cold storage warehouse sectors. Retail food appliances include the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the refrigeration equipment used to store meat, produce, dairy products, and other perishable goods.

Component - A part of the refrigerant circuit within an appliance including, but not limited to, compressors, condensers, evaporators, receivers, and all of its connections and subassemblies.

Follow-up verification test - Those tests that involve checking the repairs to an appliance after a successful initial verification test and after the appliance has returned to normal operating characteristics and conditions to verify that the repairs were successful. Potential methods for follow-up verification tests include, but are not limited to, the use of soap bubbles as appropriate, electronic or ultrasonic leak detectors, pressure or vacuum tests, fluorescent dye and black light, infrared or near infrared tests, and handheld gas detection devices.

Full charge - The amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

(1) Use of the equipment manufacturer's determination of the full charge;

(2) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;

(3) Use of actual measurements of the amount of refrigerant added to or evacuated from the appliance, including for seasonal variances; and/or

(4) Use of an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge.

Disposal - The process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded appliance into or on any land or water;

(2) The disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water;

(3) The vandalism of any appliance such that the refrigerant is released into the environment or would be released into the environment if it had not been recovered prior to the destructive activity;

(4) The disassembly of any appliance for reuse of its component parts; or

(5) The recycling of any appliance for scrap.

Exempt Substitute - Refers to certain substitutes when used in certain end-uses that are exempt from the venting prohibition and the requirements. Contact the Air Quality Compliance Manager in the Environmental Management Department for an exempt determination if it is unknown if the substitute refrigerant is exempt.

High-pressure appliance - An appliance that uses a refrigerant with a liquid phase saturation pressure between 170 psia and 355 psia at 104 °F. Examples include but are not limited to appliances using R-22, R-407A, R-407C, R-410A, and R-502.

Industrial process refrigeration - Complex customized appliances that are directly linked to the processes used in, for example, the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.

Leak inspection - The examination of an appliance to determine the location of refrigerant leaks. Potential methods include, but are not limited to, ultrasonic tests, gas-imaging cameras, bubble tests as appropriate, or the use of a leak detection device operated and maintained according to manufacturer guidelines. Methods that determine whether the appliance is leaking refrigerant

but not the location of a leak, such as standing pressure/vacuum decay tests, sight glass checks, viewing receiver levels, pressure checks, and charging charts, must be used in conjunction with methods that can determine the location of a leak.

Leak rate - The rate at which an appliance is losing refrigerant, measured between refrigerant charges. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate must be calculated using one of the following methods. The same method must be used for all appliances subject to the leak repair requirements located at an operating facility.

(1) Annualizing Method. (i) Step 1. Take the number of pounds of refrigerant added to the appliance to return it to a full charge, whether in one addition or if multiple additions related to same leak, and divide it by the number of pounds of refrigerant the appliance normally contains at full charge;

(ii) Step 2. Take the shorter of the number of days that have passed since the last day refrigerant was added or 365 days and divide that number by 365 days;

(iii) Step 3. Take the number calculated in Step 1 and divide it by the number calculated in Step 2; and

(iv) Step 4. Multiply the number calculated in Step 3 by 100 to calculate a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365\ \textit{days/year}}{\textit{shorter of:}\ \#\ \text{days since refrigerant last added or 365 days}} \times 100\%$$

(2) Rolling Average Method. (i) Step 1. Take the sum of the pounds of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year);

(ii) Step 2. Divide the result of Step 1 by the pounds of refrigerant the appliance normally contains at full charge; and

(iii) Step 3. Multiply the result of Step 2 by 100 to obtain a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added over past 365 days (or since the last successful follow-up verification test showing all identified leaks in the appliance were repaired, if that period is less than one year)}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

Low-pressure appliance - An appliance that uses a refrigerant with a liquid phase saturation pressure below 45 psia at 104 °F. Examples include R-11, R-123, R-113, and R-245fa.

Medium-pressure appliance - An appliance that uses a refrigerant with a liquid phase saturation pressure between 45 psia and 170 psia at 104 °F. Examples include R-114, R-124, R-12, R-134a, and R-500.

Mothball - To evacuate refrigerant from an appliance, or the affected isolated section or component of an appliance, to at least atmospheric pressure, and to temporarily shut down that appliance.

MVAC-like appliance A mechanical vapor compression, open-drive compressor appliance with a full charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of off-road vehicles or equipment.

Opening an appliance - Any maintenance, service, repair, or disposal of an appliance that would release any refrigerant in the appliance to the atmosphere. Connecting and disconnecting hoses and gauges to measure pressures, add refrigerant, or recover refrigerant from the appliance are not considered “opening an appliance.” Activities reasonably expected to violate the integrity of the refrigerant circuit include but are not limited to attaching or detaching hoses and gauges to and from the appliance; adding or removing refrigerant; adding or removing components; and cutting the refrigerant line. Activities such as painting the appliance, rewiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts are not reasonably expected to violate the integrity of the refrigerant circuit

Person - Any individual or legal entity, including an individual, corporation, partnership, association, state, municipality, and any officer, agent, or employee thereof.

Purged refrigerant - In calculating annual leak rates, purged refrigerant that is destroyed at a verifiable destruction efficiency of 98 percent or greater will not be counted toward the leak rate.

Reclaim - To reprocess recovered refrigerant to all of the specifications in Appendix A of 40 CFR 82, Subpart F (based on AHRI Standard 700-2016, Specifications for Refrigerants) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in section 5 of Appendix A of Subpart F.

Recover - To remove refrigerant in any condition from an appliance and to store it in an external container without necessarily testing or processing it in any way.

Recovery efficiency - The percentage of refrigerant in an appliance that is recovered by a piece of recovery and/or recycling equipment.

Recycle - To extract refrigerant from an appliance (except MVACs) and clean it for reuse in equipment of the same owner without meeting all of the requirements for reclamation. In general,

recycled refrigerant is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter.

Refrigerant - Any substance, including blends and mixtures, consisting in part or whole of a Class I or Class II ozone-depleting substance or substitute that is used for heat transfer purposes and provides a cooling effect.

Refrigerant circuit - The parts of an appliance that are normally connected to each other (or are separated only by internal valves) and are designed to contain refrigerant.

Retire - The removal of the refrigerant and the disassembly or impairment of the refrigerant circuit such that the appliance as a whole is rendered unusable by any person in the future.

Retrofit - To convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components.

Seasonal variance - The removal of refrigerant from an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent addition of an amount that is less than or equal to the amount of refrigerant removed in the prior change in season, where both the removal and addition of refrigerant occurs within one consecutive 12-month period.

Substitute - Any chemical or product, used as a refrigerant to replace a Class I or II ozone-depleting substance.

Small appliance - An appliance that is fully manufactured, charged, and hermetically sealed in a factory with five (5) pounds or less of refrigerant.

Technician - Any person who in the course of maintenance, service, or repair of an appliance (except MVACs) could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants into the environment. Technician also means any person who in the course of disposal of an appliance (except small appliances, MVACs, and MVAC-like appliances) could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants from the appliances into the environment.

Very high-pressure appliance - An appliance that uses a refrigerant with a critical temperature below 104 °F or with a liquid phase saturation pressure above 355 psia at 104 °F. Examples include R-13, R-23, R-503, R-508A, and R-508B.

2.2 Servicing Motor Vehicle Air Conditioners

Approved independent standards testing organization - A any organization which has applied for and received approval EPA under §82.38.

Approved refrigerant recycling equipment - Equipment certified by EPA or an organization approved under §82.38 as meeting either one of the standards in §82.36. Such equipment extracts and recycles refrigerant or extracts refrigerant for recycling on-site or reclamation off-site.

Motor vehicle - Any vehicle which is self-propelled and designed for transporting persons or property on a street or highway, including but not limited to passenger cars, light duty vehicles, and heavy duty vehicles. This definition does not include a vehicle where final assembly of the vehicle has not been completed by the original equipment manufacturer.

Motor vehicle air conditioners - Mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. This definition is not intended to encompass the hermetically sealed refrigeration systems used on motor vehicles for refrigerated cargo and the air conditioning systems on passenger buses using HCFC-22 refrigerant.

Properly using -

(1) Using equipment in conformity with the regulations set forth in 40 CFR 82, Subpart B, including but not limited to the prohibitions and required practices set forth in §82.34, and the recommended service procedures and practices for the containment of refrigerant set forth in Appendices A, B, C, D, E, and F of Subpart B, as applicable. In addition, this term includes operating the equipment in accordance with the manufacturer's guide to operation and maintenance and using the equipment only for the controlled substance for which the machine is designed. For equipment that extracts and recycles refrigerant, properly using also means to recycle refrigerant before it is returned to a motor vehicle air conditioner or MVAC-like appliance, including to the motor vehicle air conditioner or MVAC-like appliance from which the refrigerant was extracted. For equipment that only recovers refrigerant, properly using includes the requirement to recycle the refrigerant on-site or send the refrigerant off-site for reclamation.

(2) Refrigerant from reclamation facilities that is used for the purpose of recharging motor vehicle air conditioners must be at or above the standard of purity developed by the Air-conditioning and Refrigeration Institute (ARI 700-93) (which is codified at 40 CFR 82, Subpart F, Appendix A, and is available at 4301 North Fairfax Drive, Suite 425, Arlington, Virginia 22203). Refrigerant may be recycled off-site only if the refrigerant is extracted using recover only equipment, and is subsequently recycled off-site by equipment owned by the person that owns both the recover only equipment and owns or operates the establishment at which the refrigerant was extracted. In any event, approved equipment must be used to extract refrigerant prior to performing any service during which discharge

of refrigerant from the motor vehicle air conditioner can reasonably be expected. Intentionally venting or disposing of refrigerant to the atmosphere is an improper use of equipment.

(3) Notwithstanding any other §82.32 definitions, approved refrigerant recycling equipment may be transported off-site and used to perform service involving refrigerant at other locations where such servicing occurs. Any such servicing involving refrigerant must meet all of the requirements of 40 CFR 82, Subpart B that would apply if the servicing occurred on-site.

(4) Facilities that charge MVACs or MVAC-like appliances with refrigerant but do not perform any other service involving refrigerant (i.e., perform “top-offs” only) are considered to be engaged in “service involving refrigerant” and are therefore subject to any and all requirements that apply to facilities that perform a wider range of refrigerant servicing. For facilities that charge MVACs, this includes the requirement to purchase approved refrigerant recycling equipment. For facilities that only charge MVAC-like appliances, this does not include the requirement to purchase approved refrigerant recycling equipment but does include the requirement to be properly trained and certified by a technician certification program approved by the Administrator pursuant to either §82.40 or §82.161(a)(5).

(5) All persons opening (term defined in §82.152) MVAC-like appliances must have at least one piece of approved recovery or recycling equipment available at their place of business.

Refrigerant - Any Class I, Class II, or substitute substance used in a motor vehicle air conditioner.

Service for consideration - Being paid to perform service, whether it is in cash, credit, goods, or services. This includes all service except that done for free.

Service involving refrigerant - Any service during which discharge or release of refrigerant from the MVAC or MVAC-like appliance to the atmosphere can reasonably be expected to occur. Service involving refrigerant includes any service in which an MVAC or MVAC-like appliance is charged with refrigerant but no other service involving refrigerant is performed (i.e., a “top-off”).

Motor vehicle disposal facility - Any commercial facility that engages in the disposal (which includes dismantling, crushing or recycling) of MVACs or MVAC-like appliances, including but not limited to automotive recycling facilities, scrap yards, landfills and salvage yards engaged in such operations. Motor vehicle repair and/or servicing facilities, including collision repair facilities, are not considered motor vehicle disposal facilities.

2.3 Halon Emissions Reduction

Halon-containing equipment - Equipment used to store, transfer, and/or disperse halon.

Disposal of halon - The process leading to and including discarding of halon from halon-containing equipment.

Disposal of halon-containing equipment - The process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded halon-containing equipment into or on any land or water;

(2) The disassembly of any halon-containing equipment for discharge, deposit, or dumping or placing of its discarded component parts into or on any land or water; or

(3) The disassembly of any halon-containing equipment for reuse of its component parts.

Halon - Any of the Class I, Group II substances listed in Subpart A, Appendix A of 40 CFR 82. This group consists of the three halogenated hydrocarbons known as Halon 1211, Halon 1301, and Halon 2402, and all isomers of these chemicals.

Halon product - Any mixture or combination of substances that contains only one halon (e.g., Halon 1301 plus dinitrogen gas (N_2))

Halon blend - Any mixture or combination of substances that contains two or more halons.

Manufacturer - Any person engaged in the direct manufacture of halon, halon blends or halon-containing equipment.

Person - A any individual or legal entity, including an individual, corporation, partnership, department, or instrumentality of the United States, and any officer, agent, or employee thereof.

Technician - Any person who performs testing, maintenance, service, or repair that could reasonably be expected to release halons from equipment into the atmosphere. Technician also means any person who performs disposal of equipment that could reasonably be expected to release halons from the equipment into the atmosphere. Technician includes but is not limited to installers, contractor employees, in-house service personnel, and in some cases, owners.

3.0 Acronyms

AQCM	Air Quality Compliance Manager
AQ	Air Quality Environmental Management Department
CAA	Clean Air Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Register
CPD	Capital Planning, Design, Construction Department
EMD	Environmental Management Department
EPA	U.S. Environmental Protection Agency
HCFC	Hydrochlorofluorocarbon
MCPPD	Medical Center Physical Plant Division
MVAC	Motor Vehicle Air Conditioner
PPD	Campus Physical Plant Division
RMP	Refrigerant Management Program
SAP	Systems Applications and Products Software
SPHERA	Refrigerant Management Software
UEM	Utilities and Energy Management

4.0 Restrictions

The objective of this section is to identify over-arching restrictions when working with refrigerant, MVAC, MVAC-like, or halon containing appliances. As noted, the requirements are applicable to University staff, contractor, and vendors. The University must only employ the services of contractors or vendors that adhere to the regulatory requirements.

4.1 No Venting Rule – University Staff, Contractors, Vendors (§82.154, §82.270)

It is unlawful for any person, in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration, to 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. Further, it is unlawful for any person to knowingly release a Class I or Class II refrigerant or a non-exempt substitute refrigerant including blends and mixtures after its recovery from an appliance.

De minimis releases associated with good faith attempts to recycle or recover refrigerants are not subject to this prohibition. Except for exempt substitutes, refrigerant releases are *de minimis* only if the release occurred while following all work practices of the requirements in 40 CFR 82. Contact the Air Quality Compliance Manager (AQCM) in the Environmental Management Department (EMD) for further investigation if a release is thought to be *de minimis*.

4.2 Use of a Certified Technician – University Staff, Contractors, Vendors (§82.161, §82.34, §82.250)

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. Persons that dispose of small appliances, motor vehicle air conditioners (MVAC), or MVAC-like appliances are not required to be certified. Similarly, apprentices are not required to be certified if closely and continually supervised by a certified technician.

Activities reasonably expected to violate the integrity of the appliance refrigerant circuit include but are not limited to attaching or detaching hoses and gauges to and from the appliance; adding or removing refrigerant; adding or removing components; and cutting the refrigerant line. Activities such as painting the appliance, rewiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts are not reasonably expected to violate the integrity of the refrigerant circuit. Activities conducted on appliances that have been properly evacuated are not reasonably expected to release refrigerants unless the activity includes adding refrigerant to the appliance.

The University must only use in-house technicians, contractors, or vendors that have current EPA certification. 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.

The table below lists the required certifications needed to work on refrigerant appliances. Certified technicians may only work on appliances for which they have been properly certified.

Type of Appliance Serviced	Type of Service	Level of Required Certification
Small Appliance	Maintain, service, repair	Type I
Medium, High, or Very-High Pressure Appliance	Maintain, service, repair, dispose	Type II
Low Pressure Appliance	Maintain, service, repair, dispose	Type III
All Types	Type I, Type II, and Type III	Universal
Motor Vehicle	Maintain, service, repair	MVAC
Motor Vehicle-like	Maintain, service, repair	MVAC or Type II

4.3 Refrigerant Sales/Purchasing – University Staff (§82.154; §82.34)

The University may only sell unused cylinders of refrigerants, or unused cylinders of refrigerants used in MVAC or MVAC-like appliances to buyers that provide proof that the buyer, or at least one employee of the buyer, is a certified technician through the appropriate Subpart F (Recycling and Emissions Reduction) or Subpart B (Motor Vehicle).

The University may only sell used cylinders of refrigerant if the refrigerant was reclaimed by a certified reclaimer (refer to Section 4.4); is being transferred between one University facility to another; or for MVAC, was used only in a MVAC or MVAC-like appliance and will be used in a MVAC or MVAC-like appliance and was recycled with the requirements of Subpart B.

The University may sell refrigerant that is sold as part of an appliance with a fully assembled refrigerant circuit or an appliance component.

Records of refrigerant sales must be kept for three years. The invoice must include the name of the purchaser, the date of sale, and the quantity of refrigerant sold. The University must keep the documentation provided by the buyer to demonstrate employment of a person certified under Subpart F or Subpart B for sales of refrigerants which are not contained in an operable refrigerant circuit.

In order to purchase refrigerants other than in an operable refrigerant circuit, the University must employ a certified technician. As is the case in Purchasing/Stores, the seller may specify the certified technician be employed by a particular Department rather than the University as a whole.

4.4 Reclaimer Certification – University Staff (§82.164)

The University does not reclaim refrigerant for sell to outside buyers. If the procedure changes, a process to meet the following requirements of 40 CFR 82.164 must be developed.

i. Reclaimed refrigerant for sale to a buyer other than the University must be reclaimed to the specification and analytical methodology of 40 CFR 82, Appendix A.

ii. The University must be certified by EPA that the reclamation process meets the requirements of the regulation.

iii. The reclaimer must keep records for three years of the analysis of each batch of reclaimed refrigerant; name and address of the person sending the material for reclamation; and the quantity of the material by refrigerant type.

iv. The reclaimer must annually submit to EPA the total quantity of material by type, the total mass of each refrigerant reclaimed, and the total mass of waste product.

4.5 Appliance Recovery/Recycling Equipment – University Staff (§82.158)

No person may alter the design of certified refrigerant recovery and/or recycling equipment in a way that would affect the equipment's ability to meet the certification standards of §82.158 without resubmitting the altered design for certification testing.

The University must use recovery and/or recycling equipment that meets the following:

Recovery and/or recycling equipment manufactured or imported before November 15, 1993, intended for use during the maintenance, service, repair, or disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) will be considered certified if it is capable of achieving the level of evacuation specified in Table 2 of §82.158 when tested using a properly calibrated pressure gauge. Recovery and/or recycling equipment manufactured or imported after November 15, 1993, must be certified by an approved equipment testing organization to meet level of evacuation specified in Table 2 of §82.158.

Equipment used during the maintenance, service, repair, or disposal of small appliances must be certified by an approved equipment testing organization to be capable of recovering 90 percent of the refrigerant in the test stand when the compressor of the test stand is operational and 80 percent of the refrigerant when the compressor of the test stand is not operational, when used in accordance with the manufacturer's instructions under the conditions of Appendix C, Method for Testing Recovery Devices for Use with Small Appliances. Equipment manufactured or imported before November 15, 1993, will be considered certified if it is capable of either recovering 80 percent of the refrigerant in the system, whether or not the compressor of the test stand is operational, or achieving a 4-inch vacuum when tested using a properly calibrated pressure gauge. Equipment manufactured or imported on or after November 15, 1993, may also be certified if it is capable of achieving a 4-inch vacuum under the conditions of Appendix B1 of Subpart F, based upon ARI Standard 740-1993. Equipment manufactured or imported on or after September 22, 2003, and before January 1, 2017, may also be certified if it is capable of achieving a 4-inch vacuum under the conditions of Appendix B2 of Subpart F, based upon ARI Standard 740-1995. Equipment manufactured or imported on or after January 1, 2017, may also be certified if it is capable of achieving a 4-inch vacuum under the conditions of Appendix B3 of Subpart F (for non-flammable refrigerants), based upon AHRI Standard 740-2016 or Appendix B4 of Subpart F (for flammable refrigerants), based upon both AHRI Standard 740-2016 and UL 1963, Supplement SB, *Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant,* Fourth Edition, June 1, 2011.

Equipment used to evacuate refrigerant from small appliances before they are disposed of may also be certified if it is capable of achieving a 4-inch vacuum when tested using a properly calibrated pressure gauge.

5.0 Regulatory Requirements - MVAC/MVAC-like Appliances (Subpart B)

The objective of this section is to identify the specific operating procedures, reporting, and recordkeeping requirements associated with work performed on MVAC or MVAC-like appliances. As noted, the requirements of this section of the RMP are applicable to University staff. It is the responsibility of contractors or vendors employed through the University to follow the requirements of regulation 40 CFR 82, Subpart B. The University must only employ the services of contractors or vendors that adhere to the regulatory requirements.

5.1 Operating Procedures – University Staff (§82.32, §82.34; §82.36)

Certified technicians working on MVAC or MVAC-like appliances must use recycling and/or recovering equipment certified by EPA to meet standards contained in the appendices of 40 CFR 82, Subpart B. Recycling equipment that has not been certified is approved equipment if it is substantially identical to certified equipment, a request for determination has been submitted to EPA, and

(i) For equipment that recovers and recycles CFC-12 refrigerant, it was initially purchased before September 4, 1991;

(ii) For equipment that recovers but does not recycle CFC-12 refrigerant, it was initially purchased before April 22, 1992;

(iii) For equipment that recovers and recycles HFC-134a refrigerant, it was initially purchased before March 6, 1996;

(iv) For equipment that recovers but does not recycle HFC-134a refrigerant, it was initially purchased before March 6, 1996;

(v) For equipment that recovers but does not recycle any single, specific refrigerant other than CFC-12 or HFC-134a, it was initially purchased before March 6, 1996; and

(vi) For equipment that recovers and recycles HFC-134a and CFC-12 refrigerant using common circuitry, it was initially purchased before March 6, 1996.

Refrigerant recycling equipment that recovers or recovers and recycles CFC-12 refrigerant and has not been EPA certified or approved is considered approved for use with an MVAC-like appliance if it was manufactured or imported before November 15, 1993, and is capable of reducing the system pressure to 102 mm of mercury vacuum under the conditions set forth in Appendix A of 40 CFR 82, Subpart B.

Each area of the University that repairs or services MVAC or MVAC-like appliances must have at least one piece of approved recovery or recovery/recycling equipment available on-site. An area in the University that only charges MVAC-like appliances is not required to have recycling equipment.

Recovery and recycle equipment must be properly used in accordance with the recommended service procedures and practices set forth in Appendices A, B, C, D, E, and F of 40 CFR 82, Subpart B. For equipment that extracts and recycles refrigerant, properly using means to recycle refrigerant before it is returned to a motor vehicle air conditioner or MVAC-like appliance. For equipment that only recovers refrigerant, properly using includes the requirement to recycle the refrigerant on-site or send the refrigerant off-site for reclamation. Refer to the definition of *Properly Using* for complete details.

5.2 Recordkeeping – University Staff (§82.42)

Departments that own approved refrigerant recycling equipment must maintain records of the name and address of any facility to which refrigerant is sent.

Departments must retain records demonstrating that all persons authorized to repair or service MVAC or MVAC-like appliances are current certified technicians.

Records must be kept for a minimum of three years.

5.3 Reporting/Certification – University Staff (§82.42)

No later than January 1, 1993, the University was required to certify with EPA that the University had acquired, and properly uses, approved equipment and that each individual authorized to use the equipment is properly trained and certified. Certification is a statement signed by the owner of the equipment or another responsible officer stating:

(i) The name of the purchaser of the equipment;

(ii) The address of the where the equipment is located; and

(iii) The manufacturer name and equipment model number, the date of manufacture, and the serial number of the equipment. The certification must also include a statement that the equipment will be properly used in servicing motor vehicle air conditioners, that each individual authorized by the purchaser to perform service is properly trained and certified in accordance with §82.40, and that the information given is true and correct.

6.0 Regulatory Requirements - Halon Appliances (Subpart H)

The objective of this section is to identify the specific operating procedures, reporting, and recordkeeping requirements associated with using equipment which contains halon. As noted, the requirements of this section of the RMP are applicable to University staff. It is the responsibility of contractors or vendors employed through the University to follow the requirements of regulation 40 CFR 82, Subpart H. The University must only employ the services of contractors or vendors that adhere to the regulatory requirements.

6.1 Operating Procedures – University Staff (§82.270)

No person testing, maintaining, servicing, repairing, or disposing of halon-containing equipment or using such equipment for technician training may knowingly vent or otherwise release into the environment any halons used in such equipment. *De minimis* releases associated with good faith attempts to recycle or recover halon are not subject to this prohibition. Release of residual halon contained in fully discharged total flooding fire extinguishing systems would be considered a *de minimis* release associated with good faith attempts to recycle or recover halon.

Release of halons during testing of fire extinguishing systems is not subject to this prohibition if the following four conditions are met:

(i) Systems or equipment employing suitable alternative fire extinguishing agents are not available;

(ii) System or equipment testing requiring release of extinguishing agent is essential to demonstrate system or equipment functionality;

(iii) Failure of the system or equipment would pose great risk to human safety or the environment; and

(iv) A simulant agent cannot be used in place of the halon during system or equipment testing for technical reasons.

This prohibition does not apply to the emergency release of halons for the legitimate purpose of fire extinguishing, explosion inertion, or other emergency applications for which the equipment or systems were designed.

Persons hiring technicians who test, maintain, service, repair or dispose of halon-containing equipment must take appropriate steps to ensure that the technicians are trained regarding halon emissions reduction within 30 days of hiring.

No person shall dispose of halon-containing equipment except by sending it for halon recovery to a manufacturer operating in accordance with NFPA 10 and NFPA 12A standards, a fire equipment dealer operating in accordance with NFPA 10 and NFPA 12A standards or a recycler operating in accordance with NFPA 10 and NFPA 12A standards. This provision does not apply to ancillary system devices such as electrical detection control components which are not necessary to the safe and secure containment of the halon within the equipment, to fully discharged total flooding systems, or to equipment containing only *de minimis* quantities of halons.

No person shall dispose of halon except by sending it for recycling to a recycler operating in accordance with NFPA 10 and NFPA 12A standards, or by arranging for its destruction using one of the following controlled processes:

i. Liquid injection incineration;
ii. Reactor cracking;
iii. Gaseous/fume oxidation;
iv. Rotary kiln incineration;
v. Cement kiln;
vi. Radiofrequency plasma destruction; or
vii. An EPA-approved destruction technology that achieves a destruction efficiency of 98% or greater.

No owner of halon-containing equipment shall allow halon release to occur as a result of failure to maintain such equipment.

6.2 Recordkeeping – University Staff

There are no associated recordkeeping requirements for 40 CFR 82, Subpart H, except that records of halon emissions reduction training for employee technicians must be maintained for at least three years.

6.3 Reporting/Certification – University Staff

There are no associated reporting requirements for 40 CFR 82, Subpart H.

7.0 Regulatory Requirements - Refrigerant Appliances (Subpart F)

The objective of this section is to identify the specific operating procedures, reporting, and recordkeeping requirements associated with work performed on refrigerant-containing appliances. As noted, the requirements are applicable to University staff, contractors, and vendors. The University must only employ the services of contractors or vendors that adhere to the regulatory requirements.

7.1 Operating Procedures

To address the complexities of the operating procedures of 40 CFR 82, this section introduces applicable procedures, work instructions and forms which are applicable to required activities. Therefore, this section consists of the following components that provide operational and administrative consistency and effectiveness.

Procedures A Specified way to carry out an activity or task.

Work Instructions Step-by-step instructions to be followed to complete a procedure.

Forms Standardized forms to provide consistent documentation of required regulation elements.

Each procedure will be accompanied by an associated work instruction and form. This allows for components of the RMP to follow a standard naming structure to provide uniformity and to promote effective implementation. Each component will have a standard prefix of “AQ-” followed by the document type and a unique identification number as detailed below.

Procedures: AQ-PROC-X00 series (i.e., AQ-PROC-100).

Work Instructions: AQ-WI-X00 series corresponding to the respective Procedure number (i.e., AQ-WI-101)

Forms: AQ-FORM-X00 series corresponding to the respective Procedure number (i.e., AQ-FORM-101). If two forms correspond to the same Procedure, then “A” and “B” will be added to the series number (i.e., AQ-FORM-101A).

7.2 Recordkeeping

Refrigerant Sale:
Records of refrigerant sales must be kept for three years. The invoice must include the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. The University must keep the documentation provided by the buyer to demonstrate employment of a person certified under Subpart F or Subpart B (§82.154). Records are maintained by Risk Management & Administrative Services, Surplus Properties.

Technician Certification:
A copy of University employee technician certifications must be retained on file with the technician's specific Department. A copy must also be maintained by Environmental Management, Air Quality Compliance.

New Appliance Records:
In order to meet the following disposal and maintenance requirements, an inventory must be maintained of all appliances which contain more than 5 pounds of refrigerant. The required data collection for a new appliance (or existing appliance not previously inventoried) is contained on form AQ-FORM-101 (§82.156, §82.157). New appliances must be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain inventory records. Records are maintained by Environmental Management, Air Quality Compliance.

Appliance Disposal Records:
Maintain record of signed statement or contract with the final processor of a small appliances, MVAC, or MVAC-like appliances containing conditions that the final processor will evacuate refrigerant and use recovery equipment that meets §82.155. A copy of the statement or contract for small appliances is maintained by the Facility Services, Recycling Program.

Records of appliance disposals which contain more than 5 pounds of refrigerant must be kept for three years after appliance is disposed/retired. The required data collection for disposal is contained on form AQ-FORM-401. The type of data recorded is dependent on the refrigerant full charge (§82.156, §82.157). Appliance disposals must be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain disposal/inventory records. Records are maintained by Environmental Management, Air Quality Compliance.

Appliances Maintenance/Service/Repair Records:
Records of appliance maintenance/service/repairs (including annual leak inspections and automatic leak detection system certifications) which contain 50 pounds or more of class I, class II, or a blend of class I and class II refrigerant and where refrigerant was added or deleted, must be kept for three years. The required data collection is contained on form AQ-FORM-201 for maintenance/service/repairs and form AQ-FORM-301 for annual leak inspections automatic leak detection system certifications. The data collected is dependent on the type of work performed

and not all sections of the form may need to be completed (§82.157). Appliance maintenance/service/repairs must be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain appliance performance records. Records, including retirement/retrofit plans, are maintained by Environmental Management, Air Quality Compliance.

EPA Notification Records:

Records submitted to EPA and responses from EPA regarding extension requests, retrofit/retirement plans, relief from retrofit/retirement plan, chronically leaking appliance report, or an initial leak rate exclusion of destructed purged refrigerant report are maintained by EMD.

7.3 Reporting/Certification

To purchase refrigerants, the University must employee a certified technician (§82.154).

The University must use recovery and/or recycling equipment that meets certification requirements of §82.158. No person may alter the design of certified refrigerant recovery and/or recycling equipment in a way that would affect the equipment's ability to meet the certification standards of §82.158 without resubmitting the altered design for certification testing.

The University must only use in-house technicians, contractors, or vendors that have current and appropriate EPA technician certification (§82.161).

For appliances which contain 50 pounds or more of class I, class II, or a blend of class I and class II refrigerant, a report must be submitted to EPA (§82.157) for an extension request to repair leaks or retire/retrofit an appliance; request of relief from an appliance retirement/retrofit plan; an appliance that leaks 125% or more refrigerant in a calendar year; or an initial leak rate exclusion of destructed purged refrigerant.

8.0 Responsibilities

8.1 Environmental Health & Safety – Environmental Management (EMD)

Air Quality Compliance Manager:

- Develop and update refrigerant management program.
- Program oversite.
- Maintain SPHERA software.
- Recordkeeping of refrigerant appliances.
- Reporting requirements to EPA, State, or other regulating authorities.
- Perform leak rate calculations.
- Conduct program compliance audits and report findings to appropriate University staff.

8.2 Facilities Management – Campus Physical Plant (PPD)

8.2.1 Maintenance & Operations Preventative Maintenance Manager and Maintenance Managers

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit in SAP through collecting information on form AQ-FORM-401.
- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Enter into SAP or provide to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining

refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.2.2 Waste, Recycling & Trucking Services Manager

- For proper disposal of appliances, maintain a record of signed statement or contract with the final processor of small appliances containing conditions that the final processor will evacuate refrigerant and use recovery equipment that meets §82.155.

8.2.3 Planning, Design, & Construction Manager

- Notify Maintenance and Operations Preventative Maintenance Manager and Maintenance Managers of disposal or addition of appliances containing more than 5 pounds of refrigerant.
- Notify Maintenance and Operations Preventative Maintenance Manager and Maintenance Managers of new equipment parameters required in the operating procedures for new equipment installation.
- Ensure contactors and vendors comply with the regulation and submit the forms contained in this RMP to the Maintenance and Operations Preventative Maintenance Manager and Maintenance Managers.

8.3 Facilities Management – Medical Center (MCPPD)

8.3.1 Facilities Preventative Maintenance Manager & Physical Plant Managers

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.

- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit in SAP through collecting information on form AQ-FORM-401.
- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Enter into SAP or provide to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.3.2 Facilities Construction Manager

- Notify Preventative Maintenance Manager and Physical Plant Managers of disposal or addition of appliances containing more than 5 pounds of refrigerant.
- Notify Preventative Maintenance Manager and Physical Plant Managers of new equipment parameters required in the operating procedures for new equipment installation.
- Ensure contactors and vendors comply with the regulation and submit the forms contained in the RMP to the Preventative Maintenance Manager and Physical Plant Managers.

8.4 Utilities and Energy Management

Utilities Systems Manager

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit in SAP through collecting information on form AQ-FORM-401.

- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Enter into SAP or provide to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.5 Capital Planning, Design, Construction Department (CPD)

Capital Construction Project Manager

- Notify the managers listed in 8.2.1 and 8.3.1 of disposal or addition of appliances containing more than 5 pounds of refrigerant per circuit.
- Notify the managers listed in 8.2.1 and 8.3.1 of new equipment parameters required in the operating procedures for new equipment installation.
- Ensure contactors or vendors comply with the regulation and submit the forms contained in the RMP to the managers listed in 8.2.1 and 8.3.1.

8.6 Athletics – Projects and Trades

Directors of Operations/Athletics, Associate Director Operations/Athletic Skilled Trades, and Operations Coordinator/Athletic Projects

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit in SAP through collecting information on form AQ-FORM-401.

- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Enter into SAP or provide to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.7 Auxiliary Services

Auxiliary Services Director Associate

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Enter into SAP or provide to the AQCM.
- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit in SAP through collecting information on form AQ-FORM-401.
- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Enter into SAP or provide to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.8 Risk Management & Administrative Services

8.8.1 Surplus Property Manager

- Adhere to refrigerant sales restriction procedures of Section 4.3.
- Adhere to disposal guidelines of Section 7.1.3.

8.8.2 Stores Central Manager

- For appliances, other than pass-through, maintain an equipment inventory of refrigerant appliances, other than small appliances, in SAP through collecting information on form AQ-FORM-101.
- Maintain certified technician certifications to purchase refrigerant and provide copy of technician's certification to the AQCM.

8.9 Department or Independently Owned Appliances

Departments or buildings that own and operate refrigerant appliances not maintained through PPD, MCPPD, or Athletics must contact EMD whenever installing or servicing appliances with more than 5 pounds of refrigerant per circuit to provide the information below. This includes all property owned and operated by the University.

- Maintain certified technician certifications and provide copy of technician's certification to the AQCM.
- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Ensure any refrigerant recovery and/or recycle equipment meets EPA requirements.
- Perform maintenance/servicing/repair on refrigerant circuits in accordance with prohibitions and requirements referenced in this RMP and 40 CFR 82.
- Maintain an equipment inventory of refrigerant appliances, other than small appliances, by collecting the information on form AQ-FORM-101. Provide completed form to the AQCM.
- Maintain records of 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 in SAP through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Provide completed form to the AQCM.
- Ensure contractors/vendors provide records of 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 through collecting information on form AQ-FORM-201 or form AQ-FORM-301 for annual inspections. Provide completed form to the AQCM.
- Maintain records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Provide completed form to the AQCM.

- Ensure contractors/vendors provide records of disposal of appliances with more than 5 pounds of refrigerant per circuit through collecting information on form AQ-FORM-401. Provide completed form to the AQCM.
- Ensure that for disposal of small appliances, MVAC, and MVAC-like appliances that the disposal contract includes a requirement for the final processor to recover any remaining refrigerant from the appliance in accordance with 40 CFR 82.155. If the refrigerant leaked out prior to disposal or if the certified technicians recovered refrigerants prior to disposal, provide a signed statement indicating that on the final processor's form.

8.10 Contractor or Vendor

Contractors and vendors must adhere to all requirements of 40 CFR 82. Further, they must provide records of the following information.

- Ensure only certified technicians are used for work that is reasonably expected to violate the integrity of the refrigerant circuit.
- Provide University staff listed in previous sections or the AQCM with copies of technician's certifications that conducted work.
- Complete and submit form AQ-FORM-101 when installing refrigerant appliances, other than small appliances. Provide to University staff listed in previous sections or the AQCM.
- Complete and submit form AQ-FORM-201 or AQ-FORM-301 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. Provide completed form to University staff listed in previous sections or the AQCM.
- Complete and submit form AQ-FORM-401 when disposing of appliances with more than 5 pounds of refrigerant per circuit. Provide completed form to University staff listed in previous sections or the AQCM.

Environmental Management

PROCEDURE

NEW REFRIGERANT APPLIANCE

Purpose:
The purpose of this procedure is to demonstrate compliance with 40 CFR 82.155, *Safe disposal of appliances* and 40 CFR 82.157, *Appliance maintenance and leak repair*. To meet those requirements, an inventory of specific information must be maintained for all appliances which contain more than 5 pounds of refrigerant (all appliance except small appliances). There is no inventory requirement for the installation of small appliances.

Scope:
This procedure applies to all University employees, contractors, and vendors that maintain equipment inventory and service records of refrigerant appliances.

Responsible Personnel:
Refer to the Refrigerant Management Plan for specific responsibilities.
Environmental Management – Air Quality Compliance Manager
Facilities Management Campus– Maintenance and Operations Preventative Maintenance Manager; Maintenance Managers; and Planning, Design, & Construction Manager
Facilities Management Medical Center– Facilities Preventative Maintenance Manager; Physical Plant Managers; Facilities Construction Manager
Utility and Energy Management – Utilities System Manager
Capital Planning, Design, Construction – Capital Construction Project Manager
Athletics (Projects and Trades) – Directors of Operations/Athletics; Associate Director Operations/Athletic Skilled Trades; Operations Coordinator/Athletic Projects
Auxiliary Services – Auxiliary Services Director Associate
Risk Management & Administrative Services – Stores Central Manager
Departments or Buildings not maintained through the above programs
Contractor and Vendors

Regulatory Reference:
40 CFR 82.156(a)(3)
40 CFR 82.157(g)
40 CFR 82.157(l)

Supporting Document:
Refrigerant Management Plan
AQ-FORM-101

Procedure:
Responsible personnel ensure activities detailed in the New Refrigerant Appliance Work Instructions AQ-WI-101 are completed for a new appliance (or existing appliance not previously inventoried). Appliance information must be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Work Instructions:
AQ-WI-101

Environmental Management

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

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

PROCEDURE

MAINTENANCE OF REFRIGERANT APPLIANCE

Purpose:
The purpose of this procedure is to demonstrate compliance with 40 CFR 82.156, *Proper evacuation of refrigerant from appliances*; 40 CFR 82.157, *Appliance maintenance and leak repair* (applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants); and 40 CFR 82.158, *Standards for recovery and/or recycling equipment*. To meet those requirements, work must be performed according to the regulation, and records of appliance maintenance/service/repairs (including annual leak inspections and automatic leak detection system certifications) for appliances which contain 50 pounds or more of refrigerant per circuit and where refrigerant was added or deleted, must be kept for three years. For the purposes of the procedure, maintenance is a service or repair that adds or removes refrigerant.

Scope:

This procedure applies to all University employees, contractors, and vendors that maintain equipment inventory and service records of refrigerant appliances.

Responsible Personnel:
Refer to the Refrigerant Management Plan for specific responsibilities.
Environmental Management – Air Quality Compliance Manager
Facilities Management Campus– Maintenance and Operations Preventative Maintenance Manager; Maintenance Managers; and Planning, Design, & Construction Manager
Facilities Management Medical Center– Facilities Preventative Maintenance Manager; Physical Plant Managers; Facilities Construction Manager
Utility and Energy Management – Utilities System Manager
Capital Planning, Design, Construction – Capital Construction Project Manager
Athletics (Projects and Trades) – Directors of Operations/Athletics; Associate Director Operations/Athletic Skilled Trades; Operations Coordinator/Athletic Projects
Auxiliary Services – Auxiliary Services Director Associate
Risk Management & Administrative Services – Stores Central Manager
Departments or Buildings not maintained through the above programs
Contractor and Vendors

Regulatory Reference:
40 CFR 82.156

40 CFR 82.157
40 CFR 82.158

Supporting Documents:
Refrigerant Management Plan
AQ-FORM-201

Procedure:
Responsible personnel ensure that work is performed in accordance with requirements in 40 CFR 82 and activities detailed in the Maintenance of Refrigerant Appliance Work Instructions AQ-WI-201 are completed when maintenance/service/repairs of an appliance are performed. Appliance information must be submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Work Instructions:
AQ-WI-201

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).

Environmental Management

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 = lbs net refrigerant added ___ x 365 days/yr _____ x 100%
(% / yr) lbs refrigerant in full charge shorter of: # days since refrigerant last added or 365

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

PROCEDURE

ANNUAL LEAK INSPECTION/AUTOMATIC LEAK DETECTION SYSTEM – REFRIGERANT APPLIANCE

Purpose:
The purpose of this procedure is to demonstrate compliance with the annual leak inspections or automatic leak detection systems requirements of 40 CFR 82.157(g), *Appliance maintenance and leak repair* (applicable only to appliances that contain class I, class II, or a blend of class I and class II refrigerants). To meet those requirements, annual leak inspections or annual audits/calibrations of automatic leak detection systems of appliances which contain 50 pounds or more refrigerant per circuit that exceeded the allowable leak rate threshold must be performed annually until the appliance is demonstrated to not exceed the leak rate for one year. Records must be kept for three years.

Scope:
This procedure applies to all University employees, contractors, and vendors that maintain equipment and service records of refrigerant appliances with 50 pounds or more of refrigerant per circuit.

Responsible Personnel:
Refer to the Refrigerant Management Plan for specific responsibilities.
Environmental Management – Air Quality Compliance Manager
Facilities Management Campus– Maintenance and Operations Preventative Maintenance Manager; Maintenance Managers; and Planning, Design, & Construction Manager
Facilities Management Medical Center– Facilities Preventative Maintenance Manager; Physical Plant Managers; Facilities Construction Manager
Utility and Energy Management – Utilities System Manager
Capital Planning, Design, Construction – Capital Construction Project Manager
Athletics (Projects and Trades) – Directors of Operations/Athletics; Associate Director Operations/Athletic Skilled Trades; Operations Coordinator/Athletic Projects
Auxiliary Services – Auxiliary Services Director Associate
Risk Management & Administrative Services – Stores Central Manager
Departments or Buildings not maintained through the above programs
Contractor and Vendors

Regulatory Reference:
40 CFR 82.157(g)

Supporting Document:
Refrigerant Management Plan
AQ-FORM-301

Procedure:
Responsible personnel ensure activities detailed in the Annual Leak Inspection/Automatic leak Detection System Refrigerant Appliance Work Instructions AQ-WI-301 are completed when the inspection or audit/calibration of the appliance is performed. Appliance information must be submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Work Instructions:
AQ-WI-301

Environmental Management

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

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

PROCEDURE

DISPOSAL OF REFRIGERANT APPLIANCE

Purpose:
The purpose of this procedure is 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 82.157, *Appliance maintenance and leak repair.* To meet those requirements, records of appliance evacuation and disposal for appliances containing more than 5 pounds of refrigerant per circuit must be kept for three years.

Scope:

This procedure applies to all University employees, contractors, and vendors that maintain equipment inventory and service records of refrigerant appliances.

Responsible Personnel:
Refer to the Refrigerant Management Plan for specific responsibilities.
Environmental Management – Air Quality Compliance Manager
Facilities Management Campus– Maintenance and Operations Preventative Maintenance Manager; Maintenance Managers; and Planning, Design, & Construction Manager
Facilities Management Medical Center– Facilities Preventative Maintenance Manager; Physical Plant Managers; Facilities Construction Manager
Utility and Energy Management – Utilities System Manager
Capital Planning, Design, Construction – Capital Construction Project Manager
Athletics (Projects and Trades) – Directors of Operations/Athletics; Associate Director Operations/Athletic Skilled Trades; Operations Coordinator/Athletic Projects
Auxiliary Services – Auxiliary Services Director Associate
Risk Management & Administrative Services – Stores Central Manager
Departments or Buildings not maintained through the above programs
Contractor and Vendors

Regulatory Reference:
40 CFR 82.155
40 CFR 82.156
40 CFR 82.157

Supporting Document:
Refrigerant Management Plan
AQ-FORM-401

Procedure:
Responsible personnel ensure that disposal is performed in accordance with 40 CFR 82 and activities detailed in the Disposal of Refrigerant Appliance Work Instructions AQ-WI-401 are completed for the disposal of an appliance. Appliance information must be entered in SAP (where available on Lexington campus) or submitted to the AQCM for submittal into SPHERA to maintain inventory records.

Work Instructions:
AQ-WI-401

Environmental Management

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.

Environmental Management

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 <u>not</u> 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 <u>and refrigerant evacuated by University technician</u>.**
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