



Refrigerant Compliance Policy

Updated: August 6, 2008

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I. SCOPE

Effective July 1, 1992, it became unlawful to intentionally vent refrigerants into the atmosphere for any reason. It is the policy of Purdue University to comply with all Federal, State, and local regulations promulgated to protect the stratosphere from ozone depleting substances by preventing the release of refrigerants into the environment.

In accordance with Article 22 of the Indiana Administrative Code (326 IAC 22 - Stratospheric Ozone Protection) as well as Section 608 (National Recycling and Emission Reduction Program) and Section 609 (Servicing of Motor Vehicles) of the Clean Air Act (CAA) Title VI, Purdue University will comply with U.S. Environmental Protection Agency (EPA) regulations promulgated in Title 40, Part 82, of the Code of Federal Regulations (40 CFR Part 82 - Protection of Stratospheric Ozone). Compliance is intended to prohibit the intentional release of Class I (see Appendix B) or Class II (see Appendix C) ozone depleting substances allowing only "de-minimus" releases associated with good faith efforts to reduce, recapture, recycle, or safely dispose of any such substances. The Refrigerant Compliance Policy shall apply to all equipment on the West Lafayette campus, North Central campus, Calumet campus, Fort Wayne campus, regional agriculture centers, research farms, and any leased facility of Purdue University entities.

A. Relevant Subparts of 40 CFR Part 82

The sections of 40 CFR Part 82 most pertinent to this policy includes but is not limited to the following subparts:

1. Subpart B - Servicing of Motor Vehicle Air Conditioners (MVACs) pertaining to the servicing, maintenance, repair and disposal of MVACs and MVAC-like appliances.
2. Subpart F - Recycling and Emission Reduction pertaining to reducing emissions of Class I or Class II refrigerants and their substitutes to the lowest achievable level by maximizing the recapture and recycling of such refrigerants during the service, maintenance, repair, and disposal of appliances and restricting the sale of refrigerants.
3. Subpart H - Halon Emissions Reduction pertaining to the reduction of halon through banning the manufacture of halon blends and the intentional release of halons during repair, testing, and disposal of halon containing equipment. In addition this subpart requires proper disposal of halons and halons containing equipment as well as emissions reduction training for technicians.

B. Technician Training and Certification

Purdue University shall use only contractors or in-house service technicians that are currently certified through an EPA approved certification course to conduct the recycling, recovery, or reuse of refrigerants. Technician's training and certification must be in accordance with the provisions found in subsection 82.40 of 40 CFR Part 82 Subpart B and subsection 82.161 of 40 CFR Part 82 Subpart F. Technicians must have the appropriate level of certification required for the type of appliance and recovery/recycling equipment they work with. (See Appendix D for specific contractor reporting requirements.)

C. Recycling and Recovery Equipment

Purdue University shall make available recycling and recovery equipment that meets EPA requirements. Equipment shall be certified according to standards outlined in subsection 82.36 of 40 CFR Part 82 Subpart B and subsection 82.158 of 40 CFR Part 82 Subpart F. Purdue University will certify to EPA the following:

1. Persons maintaining, repairing, or servicing MVACs has acquired, and is properly using, approved equipment and properly trained and certified as outlined in subsection 82.42 of 40 CFR Part 82 Subpart B.
2. Person maintaining, repairing, or servicing appliances except for MVACs, and persons disposing of appliances except for small appliances and MVACs, has acquired certified recovery or recycling equipment and is complying with the applicable requirements of subsection 82.162 of 40 CFR Part 82 Subpart F.

Appropriately trained and certified service technicians shall have access to this equipment relative to their respective work area and service technician certification level. Each work area is responsible for maintaining the recycling and recovery equipment in good working order. The work area owning the recycling and recovery equipment shall be responsible for costs associated with repair and/or purchase

of recycling and recovery equipment. Records shall be maintained by each servicing work area as specified in the equipment manuals, the EPA regulations, and/or by this program.

Recycling and recovery equipment care and maintenance shall be the responsibility of each service technician that uses the equipment. The technician must verify that recycling and recovery equipment is functioning properly (as specified in the equipment's owner manual) before servicing devices containing ozone-depleting substances. Scheduled maintenance shall be conducted according to owner's manual instructions and the service technician shall replace or repair any recycling and recovery equipment that is not functioning correctly before any servicing work begins. Service technicians shall only conduct servicing in accordance with their level of certification.

D. Phase-out of Ozone Depleting Substances

Purdue University policy shall be to support a continuing strategy to phase-out the use of Class I refrigerant (Appendix B) and Class II refrigerant (Appendix C) using equipment or to retrofit the refrigerant equipment with alternative cooling substances approved and listed in the Significant New Alternatives Policy (SNAP) by EPA. This includes large equipment (e.g., chillers and cold storage units) that use Class I refrigerants and small appliances (e.g. refrigerators, freezers, ice machines, vending machines, etc.) that may use either Class I or Class II refrigerants.

Small appliances, motor vehicle air conditioners (MVACs), and MVAC-like equipment using a CFC as a refrigerant should remain in use as long as they are in sound operational condition and do not require extensive repairs or repairs that involve opening the refrigerant system. This equipment should be replaced at the end of their useful life, when the repairs become cost prohibitive, or require the refrigerant system to be opened. Equipment that exceeds the applicable annual leak-rate should be repaired and retrofitted with an approved alternative refrigerant or replaced with a new unit designed for use with SNAP alternative refrigerant.

E. Leak Testing, Prevention, and Repair

It is the policy of Purdue University to adhere to a preventative maintenance program that requires periodic leak testing to ensure refrigerant system integrity. Each affected work area shall develop standard operating procedures (SOPs) for conducting leak testing relative to their equipment and refrigerant systems maintained. Leak tests shall be conducted annually on all systems containing 50 pounds or more of refrigerant charge and shall be conducted with current technology. All system leaks shall be reported. The work area shall maintain a copy of the report and provide a copy to the RIC. If calculated leak rates are greater than allowed, repairs or a retrofit/retirement plan shall be made within 30 days from the identification of the leak.

The leak repair requirements, promulgated under Section 608 of the Clean Air Act Amendments of 1990, require that when an owner or operator of an appliance that normally contains a refrigerant charge of more than 50 pounds discovers that refrigerant is leaking at a rate that would exceed the applicable trigger rate during a 12-month period, the owner or operator must take corrective action.

Trigger Rates

For all appliances that have a refrigerant charge of more than 50 pounds, the following leak rates for a 12-month period are applicable:

Appliance Type	Trigger Leak Rate
<i>Commercial refrigeration</i>	35%
<i>Industrial process refrigeration</i>	35%
<i>Comfort cooling</i>	15%
<i>All other appliances</i>	15%

Source: US EPA Refrigerant Leak Repair Requirements
<http://www.epa.gov/ozone/title6/608/leak.html>

Additional information about leak repair requirements for appliances containing class I or class II refrigerants can be found online at the EPA web site (<http://www.epa.gov/ozone/title6/608/leak.html>).

II. RESPONSIBILITIES

For purposes of this program, an affected work area shall be a work unit within Physical Facilities, Housing and Food Services, an academic department, regional campus, farms, etc. An administrative chart is presented in Appendix A showing the affected work areas and reporting structure.

A. Refrigerant Compliance Manager (RCM) shall:

1. Be charged with the administrative control of the Refrigerant Regulations Compliance Program and have authority to enact changes necessary for compliance
2. Be familiar with and understand the current regulations pertaining to the handling, control, and proper disposal of ozone depleting substances
3. Assume or delegate the responsibility as the University's regulatory representative to the EPA and IDEM for this program
4. Implementation of future policy changes as needed

B. Refrigerant Inventory Coordinator (RIC) shall:

1. Maintain refrigerant compliance records
2. Coordinate on-going training of employees in refrigerant recovery, recycling, appliance and equipment repair, and regulatory or policy changes
3. Report any Refrigerant Compliance Policy issues or problems to REM
4. Generate reports to verify regulatory compliance

C. Work Area Coordinator (WAC) shall:

1. Ensure service technicians are certified through an approved EPA technician training course and their certification levels are appropriate to the needs of the work area
2. Ensure service technicians conduct recycling, recovery, and reuse operations properly in accordance with their level of training, the recycling and recovery
3. Ensure updated copies of the Purdue University Refrigerant Compliance Policy (this document), 40 CFR Part 82, and other relevant rules and regulations are made readily available
4. Maintain an appliance inventory of equipment containing 50 pounds or more of class I or class II refrigerant (Units containing less than 50 pounds refrigerant may also be included in this inventory or in a separate inventory. Servicing records on all units containing more than 50 pounds refrigerant must be maintained and communicated to the RIC.)
5. Maintain written SOPs for each piece of recycling/recovery equipment
6. Maintain a binder in work areas affected by this policy that contains the following information:
 - a. SOPs
 - b. Owner's manuals
 - c. Copies of service technicians' certificates
 - d. Refrigerant Use/Recovered/Reclaimed forms
 - e. Maintenance record forms
 - f. Other related refrigerant compliance records
7. Maintain a copy of all refrigerant purchase, use, recovery, recycling, and etc. documents in the respective work area and report the information to the RIC in a timely manner

D. Service Technicians shall:

1. Ensure certification level is maintained appropriate to the needs of the work area
2. Conduct servicing only in accordance with level of certification
3. Care for and maintain the recycling and recovery equipment that they use
4. Inspect recycling and recovery equipment before each use to verify that it is functioning properly and repair or replace any equipment that is not functioning correctly before servicing any devices that contain ozone-depleting substances
5. Perform scheduled maintenance on devices containing ozone-depleting substances following the owner's manual instructions

6. When required by regulation or the owner's manual instructions, it may be required to attach use and maintenance records to the equipment or refrigerant container

E. Radiological and Environmental Management (REM) shall:

1. Maintain written refrigerant compliance policy documents
2. Conduct periodic program audits to monitor policy and regulatory compliance
3. Notify regulatory agencies of refrigerant leaks as required
4. Assist RIC with training of employees involved in repair, recovery, and recycling of refrigerants
5. Facilitate regulatory inspectors

III. DOCUMENTATION

Purdue University shall maintain records that track new refrigerants and refrigeration equipment from date of purchase to offsite disposal. Refrigerant purchases shall only be from vendors that comply with EPA regulations concerning ozone-depleting substances. Records of refrigerant purchases must be submitted to the RIC for inclusion in the master database. In order to monitor performance and ensure compliance with the law, Purdue University requires that the following records be kept:

A. Certifications

A copy of the service technicians' training certificates must be maintained in the work area. The certificate copies should be kept in a binder located in each area. Employees shall be trained so they are familiar with the binder, its contents, and its location. Refresher training on the work area specific information should be conducted annually and coordinated by the WAC. In addition, any in-house training should be documented and maintained by the WAC.

Contractors hired to conduct refrigerant associated work for Purdue University or its entities shall use appropriately certified technicians to conduct the work. The contracting work area shall ensure that the service contracts contain EPA refrigerant compliance language as well as ensure contractor competency by verifying qualifications and work practices. A copy of all forms generated during the contract work must be supplied to and maintained by the WAC. See Appendix D for further contractor requirements.

B. Recordkeeping Forms

The purchase, use, recovery, recycling, reuse, and disposal of Class I or Class II ozone-depleting substances shall be tracked by each work area affected by this program. Each WAC shall also report the information to the RIC. REM can provide example forms upon request.

IV. HANDLING OF REFRIGERANT WHERE ON-SITE STORAGE OCCURS

A. Filling Refrigerant Cylinders

Refrigerant cylinders should not be filled in excess of 80% of the fluid capacity. It is considered overfilling if a cylinder is filled more than 80% of capacity. Overfilling may result in serious safety issues such as a buildup in hydrostatic pressure that can cause a significant explosion.

B. Emission Reduction

Emission reduction shall be accomplished through servicing practices that include but are not limited to the following:

1. Adhering to best equipment use practices and manufacturers' instructions and procedures in combination with the diligent use of forms, reporting structure, and training outlined in this document.
2. Establishing retrofitting and replacement programs for refrigerant systems
3. Maintaining efficient system performance and instituting operations to help conserve energy consumption.
4. Recovering refrigerants from appliances for reuse, reclamation or proper destruction
5. Using recycled refrigerant that meets or exceeds ARI requirements before reusing it in equipment.
6. Using only approved, clean, and leak free containment vessels and recovery equipment

7. Using trace gases with a lower environmental impact. For example, virgin HCFC-22 presents a lower environmental risk than a fully halogenated gas mixed with dry nitrogen.
8. Use of dry nitrogen to break all vacuums created by recovery actions.

C. Refrigerant Contamination and Disposal

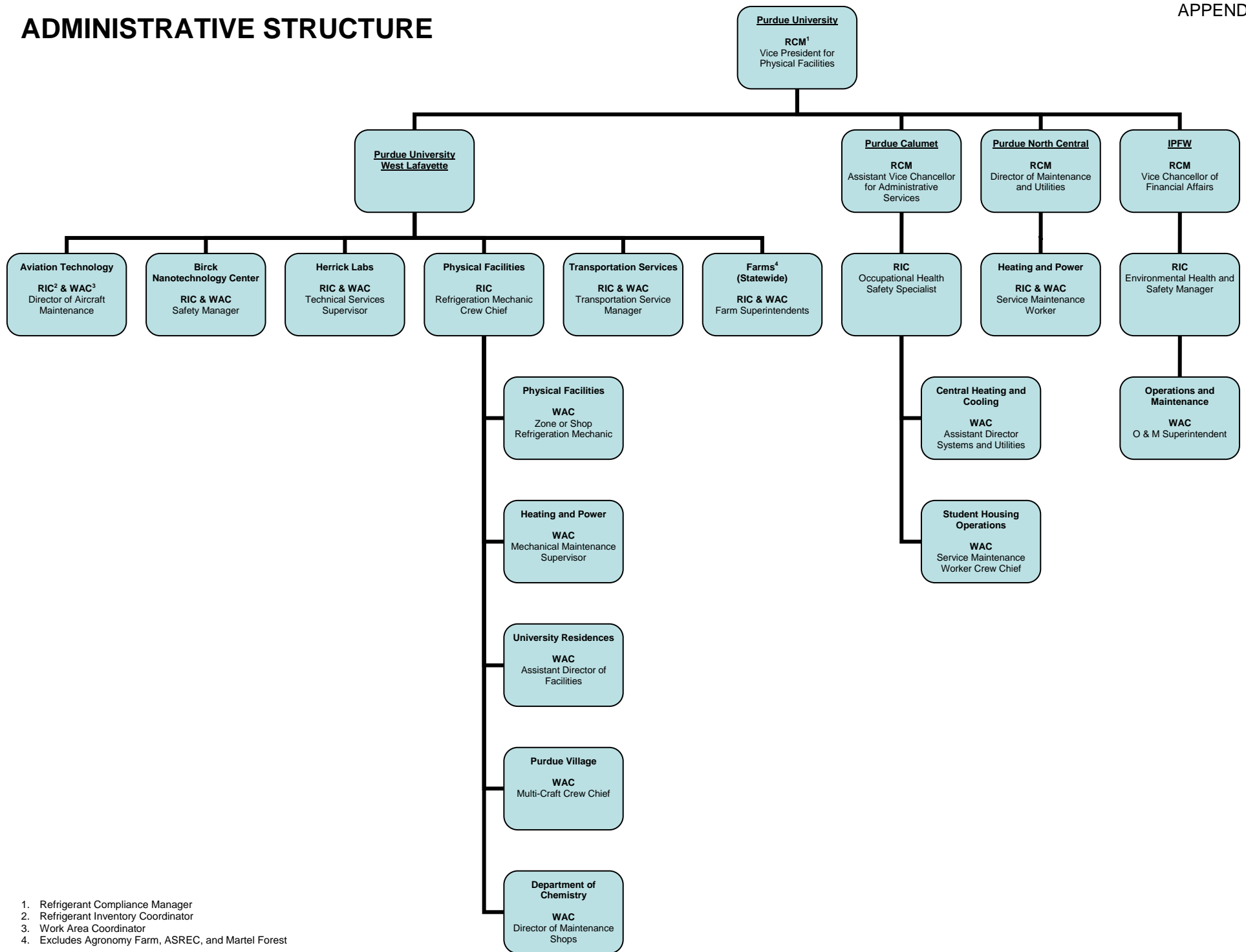
Separate, clean, and evacuated recovery vessels shall be provided for each refrigerant. Each refrigerant cylinder shall be labeled and marked in accordance with the ARI Guidelines (K and N), EPA, and DOT regulations.

Refrigerants shall not be mixed. Mixed refrigerants shall be considered unusable. If refrigerants are mixed the resulting product shall be considered hazardous waste. In addition, oils extracted from refrigerant, recovery machines, or vacuum pumps shall be kept separate from other oils and stored in specifically identified drum. Disposal of this hazardous waste and/or oil shall be done through REM's Hazardous Materials Management group by submitting a Hazardous Material Pick-up Request (Form HMM-001) to REM. Refrigerant waste containers labeling shall be in accordance with Purdue University's Guidelines: Handling and Disposal of Chemicals.

Refrigerants declared as waste shall be recorded and the Refrigerant Use Tag shall be pulled from the container. All information from the Refrigerant Use Tag shall be kept in the work area records as well as submitted to the RIC for inclusion into the master database. Spent refrigerant cylinders shall be destroyed and not reused.

APPENDICES

ADMINISTRATIVE STRUCTURE



1. Refrigerant Compliance Manager
 2. Refrigerant Inventory Coordinator
 3. Work Area Coordinator
 4. Excludes Agronomy Farm, ASREC, and Martel Forest

CLASS I CONTROLLED SUBSTANCES

Appendix A to Subpart A, 40 CFR Part 82

A. Group I:

CFCl₃-Trichlorofluoromethane (CFC-11)
 CF₂Cl₂-Dichlorodifluoromethane (CFC-12)
 C₂F₃Cl₃-Trichlorotrifluoroethane (CFC-113)
 C₂F₄Cl₂-Dichlorotetrafluoroethane (CFC-114)
 C₂F₅Cl-Monochloropentafluoroethane (CFC-115)
 All isomers of the above chemicals

B. Group II:

CF₂ClBr-Bromochlorodifluoromethane (Halon-1211)
 CF₃Br-Bromotrifluoromethane (Halon-1301)
 C₂F₄Br₂-Dibromotetrafluoroethane (Halon-2402)
 All isomers of the above chemicals

C. Group III:

CF₃Cl-Chlorotrifluoromethane (CFC-13)
 C₂FCl₅-Pentachlorofluoroethane (CFC-111)
 C₂F₂Cl₄-Tetrachlorodifluoroethane (CFC-112)
 C₃FCl₇-Heptachlorofluoropropane (CFC-211)
 C₃F₂Cl₆-Hexachlorodifluoropropane (CFC-212)
 C₃F₃Cl₅-Pentachlorotrifluoropropane (CFC-213)
 C₃F₄Cl₄-Tetrachlorotetrafluoropropane (CFC-214)
 C₃F₅Cl₃-Trichloropentafluoropropane (CFC-215)
 C₃F₆Cl₂-Dichlorohexafluoropropane (CFC-216)
 C₃F₇Cl-Monochloroheptafluoropropane (CFC-217)
 All isomers of the above chemicals

D. Group IV:

CCl₄-Carbon Tetrachloride

E. Group V:

C₂H₃Cl₃-1,1,1 Trichloroethane (Methyl chloroform)
 All isomers of the above chemical except 1,1,2-trichloroethane

F. Group VI:

CH₃Br--Bromomethane (Methyl Bromide)

G. Group VII:

CHFBr₂-Dibromofluoromethane
 CHF₂Br-Bromodifluoromethane (HBFC-22B1)
 CH₂FBr-Bromofluoromethane
 C₂HFBBr₄-Tetrabromodifluoroethane
 C₂HF₂Br₃-Tribromodifluoroethane
 C₂HF₃Br₂-Dibromotrifluoroethane
 C₂HF₄Br-Bromotetrafluoroethane
 C₂H₂FBr₃-Tribromofluoroethane
 C₂H₂F₂Br₂-Dibromodifluoroethane
 C₂H₂F₃Br-Bromotrifluoroethane
 C₂H₂FBr₂-Dibromofluoroethane
 C₂H₃F₂Br-Bromodifluoroethane
 C₂H₄FBr-Bromofluoroethane
 C₃HFBBr₆-Hexabromofluoropropane
 C₃HF₂Br₅-Pentabromodifluoropropane

C₃HF₃Br₄-Tetrabromotrifluoropropane
C₃HF₄Br₃-Tribromotetrafluoropropane
C₃HF₅Br₂-Dibromopentafluoropropane
C₃HF₆Br-Bromohexafluoropropane
C₃H₂FBr₅-Pentabromodifluoropropane
C₃H₂F₂Br₄-Tetrabromodifluoropropane
C₃H₂F₃Br₃-Tribromotrifluoropropane
C₃H₂F₄Br₂-Dibromotetrafluoropropane
C₃H₂F₅Br-Bromopentafluoropropane
C₃H₃FBr₄-Tetrabromofluoropropane
C₃H₃F₂Br₃-Tribromodifluoropropane
C₃H₃F₃Br₂-Dibromotrifluoropropane
C₃H₃F₄Br-Bromotetrafluoropropane
C₃H₄FBr₃-Tribromofluoropropane
C₃H₄F₂Br₂-Dibromodifluoropropane
C₃H₄F₃Br-Bromotrifluoropropane
C₃H₅FBr₂-Dibromofluoropropane
C₃H₅F₂Br-Bromodifluoropropane
C₃H₆FB-Borofluoropropane
All isomers of the above chemicals

CLASS II CONTROLLED SUBSTANCES

Appendix B to Subpart A, 40 CFR Part 82

CHFCl₂-Dichlorofluoromethane (HCFC-21)
 CHF₂Cl-Chlorodifluoromethane (HCFC-22)
 CH₂FCI-Chlorofluoromethane (HCFC-31)
 C₂HFCI₄-Tetrachlorfluoroethane (HCFC-121)
 C₂HF₂Cl₃-Trichlorodifluoroethane (HCFC-122)
 C₂HF₃Cl₂-Dichlorotrifluoroethane (HCFC-123)
 C₂HF₄Cl-Chlorotetrafluoroethane (HCFC-124)
 C₂H₂FCI₃-Trichlorofluoroethane (HCFC-131)
 C₂H₂F₂Cl₂-Dichlorodifluoroethane (HCFC-132)
 C₂H₂F₃Cl-Chlorotrifluoroethane (HCFC-133)
 C₂H₃FCI₂-Dichlorofluoroethane (HCFC-141)
 CH₃CFCI₂-Dichlorofluoroethane (HCFC-141b)
 C₂H₃F₂Cl-Chlorodifluoroethane (HCFC-142)
 CH₃CF₂Cl-Chlorodifluoroethane (HCFC-142b)
 C₂H₄FCI-Chlorofluoroethane (HCFC-151)
 C₃HCFCI₆-Hexachlorofluoropropane (HCFC-221)
 C₃H₂F₂Cl₅-Pentachlorodifluoropropane (HCFC-222)
 C₃HF₃Cl₄-Tetrachlorotrifluoropropane (HCFC-223)
 C₃HF₄Cl₃-Trichlorotetrafluoropropane (HCFC-224)
 C₃HF₅Cl₂-Dichloropentafluoropropane (HCFC-225)
 CF₃CF₂CHCl₂-Dichloropentafluoropropane (HCFC-225ca)
 CF₂ClCF₂CHClF-Dichloropentafluoropropane (HCFC-225cb)
 C₃HF₆Cl- Chlorohexafluoropropane (HCFC-226)
 C₃H₂FCI₅-Pentachlorofluoropropane (HCFC-231)
 C₃H₂F₂Cl₄-Tetrachlorodifluoropropane (HCFC-232)
 C₃H₂F₃Cl₃-Trichlorotrifluoropropane (HCFC-233)
 C₃H₂F₄Cl₂-Dichlorotetrafluoropropane (HCFC-234)
 C₃H₂F₅Cl-Chloropentafluoropropane (HCFC-235)
 C₃H₃FCI₄-Tetrachlorofluoropropane (HCFC-241)
 C₃H₃F₂Cl₃-Trichlorodifluoropropane (HCFC-242)
 C₃H₃F₃Cl₂-Dichlorotrifluoropropane (HCFC-243)
 C₃H₃F₄Cl-Chlorotetrafluoropropane (HCFC-244)
 C₃H₄FCI₃-Trichlorofluoropropane (HCFC-251)
 C₃H₄F₂Cl₂-Dichlorodifluoropropane (HCFC-252)
 C₃H₄F₃Cl-Chlorotrifluoropropane (HCFC-253)
 C₃H₅FCI₂-Dichlorofluoropropane (HCFC-261)
 C₃H₅F₂Cl-Chlorodifluoropropane (HCFC-262)
 C₃H₆FCI-Chlorofluoropropane (HCFC-271)
 All isomers of the above chemicals

CONTRACTOR REQUIREMENTS

Refrigeration contractors hired by Purdue University shall provide documentation that their technicians have been trained and certified through an EPA approved program as mandated in 40 CFR 82.161. The certification must be appropriate to the type of equipment they will maintain, service, or repair.

New Appliance Installation

Contractors hired to install a new refrigeration appliance shall provide Purdue with the following information about the appliance:

- Total volume of the refrigerant system
- The refrigerant used to charge the system
- The amount of refrigerant used to charge the system

In addition the contractor shall attach a boilerplate or other method of permanent tagging to the appliance that records its total refrigerant capacity as well as the amount of refrigerant used to initially charge the system.

Existing Appliance Service

Contractors hired to maintain, service, or repair an appliance shall provide Purdue with the amount and type of refrigerant added to or recovered from the appliance.