Lamar University

Hazardous Waste Management Program

Reference:

http://www.epa.gov/epawaste/hazard/generation/cesqg.htm

Click on this link on this web page

Part 261.5 of the Code of Federal Regulations (40 CFR Part 261.5)

and/or

Environment, Health and Safety Online - Summary of Requirements for CESQGs

1. Purpose

The purpose of this program is to provide a safe and compliant process for the disposal of Hazardous Wastes at Lamar University. The program is designed to comply with Federal and State regulations for Hazardous Waste.

This program does not apply to the disposal of radioactive, infectious, or biological wastes. Compliance is critical and requires full cooperation from all University departments.

2. Hazardous Waste Regulation

In 1980 the resource Conservation and Recovery Act (R.C.R.A.) was established and administered by the Environmental Protection Agency (EPA) (42 U.S.C.) Under this act the EPA has the responsibility for regulating hazardous chemical waste. R.C.R.A. established a 'cradle to the grave' hazardous chemical waste management requirement to protect the public health and environment from the improper disposal of chemical waste.

The Texas Commission on Environmental Quality (TCEQ) administers an equivalent to RCRA for the State of Texas under Industrial Solid Waste and Municipal Hazardous Waste Regulations (Title 3 1, Part IX, chapter 355).

Lamar University is a "Conditionally Exempt Small Quantity Generator" (CESQG) of hazardous waste and must comply with State and Federal regulations on waste disposal to allow us to maintain this status. Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste. All quantities of acute hazardous waste are subject to full regulation under parts 262 through 268, and parts 270 and 124 of this chapter, and the notification requirements of section 3010 of RCRA.

Please note that if at any time we exceed our quotas to maintain our CESQG status then the paperwork and forms required by all who produce or purchase chemicals will be excessively more.

Lamar University is not allowed to treat or dispose of hazardous chemical waste other than by a licensed vendor. It is illegal to dispose of hazardous chemical waste by dilution, evaporation, or disposal in the sanitary/storm sewers or the local municipal landfill. Failure to comply with chemical waste regulations could result in large fines and penalties for the University. Individual generators/employees causing the violation may be personally liable. Violations can range from improper labeling waste to intentional disposing of Hazardous Chemical Waste into the air, down the drains or in the trash.

A Waste generator is responsible 'from the cradle to the grave' and is always responsible for environmental damage; therefore the choice of a reliable disposal facility is very important. In Texas non-compliance violations can be civil, criminal, or administrative violations and penalties can range from up to $25,000/day in fines to a fifteen year prison term for individuals.

3. Responsibilities

Lamar University's Department of Risk Management is responsible for:

- The administration of the Hazardous Waste Management Program at Lamar University.
- Ensuring that all chemical waste is properly packaged, labeled, logged before disposal
- Ensuring that all chemical waste is transported to a permitted off-site facility for storage, treatment and disposal.
- The collection, storage and transportation of all hazardous chemical waste for disposal.
- Provision of information and assistance to individual chemical waste generators
- Maintaining permanent records of movement of all Hazardous Chemical Waste on the campus.

Hazardous Waste Generators such as researchers; professors; shop foreman etc., are responsible for:

- Following the disposal procedures
- Assuring that their employees and research assistants are trained in proper disposal procedures
- Properly identifying the hazardous chemical waste
- Training the employees and students on the hazards of the chemicals and waste in their areas
- Developing Emergency Response Procedures for chemical spills.

4. Hazardous Waste Disposal Program

<u>Hazardous Chemical Waste Determination</u>

Material becomes a waste when it is no longer useful as determined by the 'owner' and shall be disposed of. If the material is to be disposed of, it shall be determined if this material is hazardous or non-hazardous.

Hazardous wastes are those defined by the United States Occupational Safety and Health Administration (OSHA) as a substance for which there is a statistically significant evidence, based on at least one scientific study, showing that acute or chronic harm may result from exposure to that substance. This is regardless of whether the handling of the material is proper or improper.

Chemical waste can be made less hazardous by treatment to reduce the hazard or the quantity of waste in the laboratory if the treatment protocol is included in the experimental procedure.

A chemical waste is hazardous if it fits into one of the following categories:

a. Listed Waste:

A listed waste is one included in one of four lists, generated by the United States Environmental Protection Agency (EPA; TCEQ). Identified by the letters F, K, P, and U. Within the lists the materials are assigned hazardous waste numbers and hazard rating by the EPA. The ratings systems and the lists are provided in appendix 2.

The definitions for the list types are as follows:

(i) Type F wastes are generic categories of solvents and wastes and waste water from some specific processes.

(ii) Type K wastes are hazardous wastes from specific sources.

(iii) Type P wastes include acutely hazardous wastes.

(iv) Type U wastes are specific commercial chemical products, chemical intermediates and off-specification chemical products.

b. Characteristic Waste:

If a waste is not found to be one of the Listed Wastes it may be an "unknown" waste, which must be tested to determine the nature of the waste properties or characteristics. The Characteristics to be evaluated are:

(i) Ignitability (Waste #D001): Any easily combustible or flammable liquid with a flash point less than 600 C (1400 F), or solid that burns easily.

(ii) Corrosivity (Waste #D002): Any waste that dissolves metals or other materials or burns the skin, pH less than 2 or greater than 12.5.

(iii) Reactivity (Waste #D003): Wastes which are unstable, release toxic gases, or undergo rapid or violent chemical reaction with water or other materials.

(iv) EP Toxicity (Waste #s D004-D017): Extracts of the material contain high concentrations of heavy metals and/or specific pesticides that could be released into ground water.

Appendix 2 contains the list of the contaminants and their maximum allowed concentrations to exempt from EPA Toxic designation.

Hazardous Waste Accumulation and Storage:

The University shall store all Hazardous Waste in a central temporary accumulation building.
This temporary storage facility complies with subpart DD of the 40 CFR Part 265.
The containment/storage building complies with 40 CFR 265.1101

The University has three storage units within the containment building.

The chemical containment/storage building is located on the side of the Dept. of Chemistry and Biochemistry building facing the Sheila Humphrey Recreational area parking lot.

Inspection of the Temporary Accumulation unit

The accumulation units shall be inspected regularly by the Hazardous Waste Coordinator to look for any signs of corrosion, dents, bulges, cracks, or other signs of deteriation that could cause hazardous waste to be released.
The inspection shall be documented and retained for a period of one year.
The standard for containment building condition reporting (40 CFR Part 265.1101 (c) (3)) shall be followed upon detection of a condition that could lead to or has caused a release of hazardous waste.

Emergency Preparedness and Prevention

The central accumulation area/building shall be maintained and operated to minimize the potential for the release of hazardous material to the environment. (Refer to 40 CFR Part 265.31)
The following applicable emergency equipment and procedures shall be maintained in the central accumulation building by Facilities Management and periodically tested to ensure it is in working order:

- Fire alarms
- Spill control equipment
- Decontamination equipment
- Automatic sprinklers
- A posted list of emergency contact numbers
- All alarm systems and fire protection equipment shall be tested and maintained as necessary to assure its proper operation in the time of emergency by the Lamar University Facilities Management Department.

- Waste containers shall be arranged in the central accumulation area so that there is adequate aisle space to allow access for emergency personnel and equipment.
- Lamar University shall comply with the Preparedness and Prevention Standard 40 CFR Part 265.37 concerning emergency arrangements with local and state authorities.

Procedures for Hazardous Waste Removal (Off-site)

The Department of Risk Management shall require all contracted hazardous waste transporters to comply with the requirements set forth by this plan, in addition to the federal, state and local hazardous waste regulations.

Packing

The contracted hazardous waste transporter shall package all hazardous waste in accordance with all Department of Transportation regulations under 49 CFR Parts 173, 173.12 & Subpart B, 178, and 179.

The Department of Risk Management shall require all contracted hazardous waste transporters to carry emergency spill cleanup materials when packing hazardous materials for transportation.

Labeling and Marking

Before transporting the hazardous waste, the transporter shall label each package in accordance with Department of Transportation labeling requirements (49 CFR Part 172 Subpart D and E).
The transporter shall mark all containers of 110 gallons or less used in transportation with the following words and information displayed in accordance with the requirements of 49 CFR 172.304: **"HAZARDOUS WASTE"**

Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the "U.S. Environmental Protection Agency".

Placarding
The transporter shall placard the transportation vehicle according to Department of Transportation regulations 49 CFR Part 172 Subpart F for hazardous materials.

Manifest
Lamar University Dept. of Risk Management, Hazardous Waste Coordinator and hazardous waste transporter will mutually designate on the manifest one primary facility that is permitted to handle the waste described on the manifest.

Procedures for Hazardous Waste removal On-site

As waste is classified it shall be accumulated and stored until it can be disposed of. The following rules shall be applied to the accumulation and storage of materials classified as hazardous waste:

a. Hazardous wastes of differing classifications or physical properties shall be kept in separate closed containers, as shall wastes that are incompatible with one another. This will require that aqueous and organic wastes be separated. Halogenated and non-halogenated organic wastes shall be kept separate from one another.

b. Hazardous wastes shall be stored in closed containers that can be sealed and are not subject to decomposition by the contents.

(i) Aqueous hazardous waste solutions shall not be stored in metal drums.
(ii) Waste with pH greater than 8 wastes shall not be stored in glass containers.
(iii) Organic hazardous wastes shall be accumulated and stored in containers which do not contain polymer components that may be structurally weakened by exposure to the wastes.
(iv) Wide mouth containers shall not be used for liquids. Two inch space shall be maintained at the top of each container of liquid. Drums require a four inch head space.

c. Dry PPE waste (rags, towels, Tyvek suits, gloves etc.) is disposed of as Class I Non-RCRA Waste, assuming there are no visible liquids and no high toxicity constituents such as mercury, PCBs etc. The local landfill is designated for municipal trash only; this waste needs to go a Class I landfill.

<u>Universal Waste</u>

This is any hazardous waste that is subject to 40 CFR Part 273 and TAC 335.261 and includes:

a. Art related chemical waste
b. Mercury thermometers and thermostats (unbroken) that are not hazardous using 40 CFR 261 Subpart C
c. Batteries including lead-acid that are not managed under 40 CFR 266, Subpart G
d. Recalled pesticides that are part of a voluntary or mandatory recall under FIFRA or pesticides managed as part of a waste pesticide program

<u>Nonhazardous waste:</u>

Wastes that meet none of the criteria of hazardous wastes shall be considered as nonhazardous. Following certification of a waste as nonhazardous it may be treated as general garbage. It is important however that the waste be certified first.

Disposal of Nonhazardous Wastes:

The City of Beaumont does regulate what wastes may be disposed of in the public sewers. Some of these rules are more stringent than the criteria for classification of a waste as hazardous.
Based on these rules, nonhazardous wastes that meet the following properties may NOT be disposed of in the sewer lines.

(i) Any fat, oil, grease, ash, cinder, sand, mud, shavings, metal, glass, tar or other solid or viscous liquid substance which may cause obstruction to the flow in sewer or other interferences with the proper operation of the wastewater treatment system.

(ii) Any liquid or vapor having a flash point temperature higher than 650C (1500F).

(iii) Any wastewater with a pH less than 6.0 or above 11.0 or having any corrosive property capable of causing damage or hazard to structures, equipment, or personnel of the wastewater treatment system.

(iv) Any waste or water containing suspended or undissolved solids of such character that unusual attention or expense is required to handle such material.

(v) Any water with objectionable odor or color.

Hazardous Waste labelling:

Original container labels shall be destroyed, defaced completely or preferably removed if used for chemical waste accumulation.
When the waste is first added the words "Unwanted Material" or "other equally effective wording that is used consistently" shall be added to the label until time for collection and a "**Hazardous Waste"** determination made.
Once unwanted material has been introduced to an accumulation/ storage container, the date shall be noted on the container.

EPA regulations require that waste containers be labelled with the chemical contents.
The label has to have enough information to make a 'Hazardous Waste' determination.
List all chemicals added including water. Lists can be continued on a separate label.
List the amounts of the contributions to the container. Include the EPA waste identification number of a waste if known.
Use full names of chemicals and compounds, NOT formula, abbreviations, or structures.
GHS labels for all these chemicals listed shall be added.
When a container is determined to require collection by the Hazardous Waste Assistant then a request shall be made and a completion date added to the label.
The request for removal shall be by email, when containers are full or there is no expectation of any further wastes of the type in the container. This shall be within six

months of the start of accumulation or three days of the container being full if less than six months. (See section on Removal Procedures).

A file copy of the label used by the Hazardous Waste can be obtained from the Dept. of Risk Management Hazardous Waste Coordinator. Diagrams of these labels are shown in the "Labels" section.
The labels can be printed on purpose made adhesive backed labels
On these labels;
The date is the date that accumulation is complete
The Waste Generator is the Principal Investigator or Research Faculty in charge of the lab that generated the waste.

Labels for containers of potentially explosive materials such as picric acid; silanes; nitro compounds and ethers shall indicate the percentage concentration of these chemicals.

Waste shall be removed from the site to the Waste handling area (room 114 in Chemistry building) by the Waste Handling Assistant. Waste from teaching laboratories shall be removed when all sections have completed the particular experiment that produces the waste. An exception to this exists where halogenated and non-halogenated organic solvent wastes produced in successive experiments are collected separately in larger containers. Such containers should be removed at the end of the semester. Containers shall have a two inch headspace for bottles and four inch head space for drums.

Transport of waste shall be done following the rules for the transport of any chemical material.

Mercury thermometers that are broken and their pieces may contain small amounts of mercury and shall be placed in a separate labeled, and closed container from other glass, this is considered hazardous waste, and shall be collected by the Hazardous Waste Assistant.

Clean glass wastes, particularly broken glass, shall be kept separate from the general garbage to avoid potential safety hazards to custodians. Specific glass containers shall be made available in each laboratory area for the disposal of glass waste. Workers shall wear goggles and appropriate gloves when disposing of this clean glass waste. **This waste is not collected by Dept. of Risk Management, it is the responsibility of the individual academic department.**

Removal Procedures

a. Once the container is ready for collection add the accumulation complete date and request collection by email from the Hazardous Waste Coordinator. The Coordinator needs to know the building and room number and shall generate an email response to the Hazardous Waste Assistant, copied to the generator. The Hazardous Waste

Assistant shall arrange a fixed time to collect this waste with the generator and shall send this information by email, copied to the Coordinator.

b. Containers with improper caps, leaks, surface contamination or improper labelling shall not be accepted.
c. It is **illegal** to dispose of hazardous chemical in any of the following way:
    1. Disposal through the sanitary system
    2. Intentional evaporation in a fume hood.
    3. Disposal in the regular trash.

Transportation

- A two level cart, with a three-inch lip on each level, shall be used to transport all hazardous waste from the laboratory/site to the temporary handling area.
- Freight elevators, where possible, shall be used to transport waste to the temporary accumulation area. Personnel shall not ride the elevators with these materials.
- Chemically incompatible materials shall be separated using the two levels on the cart.
- Spill cleanup materials will be present on the cart at all times during pick-up of hazardous materials. Drip pads shall line each level of the cart to prevent any mixing of incompatible chemicals.
- Transportation cart shall be labeled with hazard warning signs.

Personal Protection

Personal protection equipment shall be required during hazardous waste pickups. Safety personnel will determine the level of protection required to safely transport the materials.

Labels

File copies of these can be obtained from the Waste Coordinator.
Chemical name/common name shall be written for all chemicals in the container.
Chemical Formulae or abbreviations are not acceptable.
This information can be found on the SDS along with the GHS information.

UNIVERSAL WASTE

Lamar University
EPA ID No. TXD053623179

Chemical Composition and Associated Hazard	**%**
□ Corrosive □ Reactive □ Other (explain) □ Non-Hazardous □ Toxic □ Ignitable □ Oxidizer	
Waste Generator information	
Department	
Building	

HAZARDOUS WASTE

Lamar University
EPA ID No. TXD053623179

Chemical Composition and Associated Hazard	**%**
□ Corrosive □ Reactive □ Other (explain) □ Non-Hazardous □ Toxic □ Ignitable □ Oxidizer	
Waste Generator information	
Department	
Building	

Emergency Procedures

All employees shall be informed of hazardous materials they might use or be exposed to at work. In addition the program shall include recorded training on handling spills and other emergencies. Safety Data Sheets are a source of this information and shall be maintained for all chemicals used or stored within a workplace. Special cleanup supplies shall be available and employees shall be trained on how to use these supplies. Contaminated clothing, rags, absorbent materials, or other waste from cleanup of spills or leaks must be disposed of as hazardous waste.
All labs shall post emergency numbers to be used and develop response procedures for emergencies.

Emergency Telephone numbers:

LU Police	409.880.8311
LU Health center	409.880.8466
LU Safety Specialist	409.880.8008
Email: jewel.courville@lamar.edu	
LU Hazardous waste coordinator	409.880.8276
Email: marsha.williams@lamar.edu	

Off Campus:

Emergency services	911

Emergency Spill Response Plan for laboratories
The University Risk Management Dept. shall reference the Hazardous Materials Emergency Response Plan for emergency spill procedures.

Training

The University Hazardous Waste Coordinator shall provide training to the laboratory Principal Investigator, Chemical Hygiene Officer, and anyone who handles hazardous waste in laboratories.
Each employee/student shall receive training on proper handling of chemicals and emergency response procedures.

Initial training shall be completed during the first month of employment (refresher training is provided annually thereafter). Hazardous waste training shall be conducted as part of the annual laboratory safety training.

The laboratory Principal Investigator, Moderator, Chemical Hygiene Officer, shall document all hazardous waste training. Training records will be kept for at least three years from the date the employee last worked at the university

Appendix 1

Definitions

Central Accumulation Area/building – Area designated for the storage of hazardous wastes prior to moving to permitted disposal facility

Generator – Any person who produces hazardous waste.

Hazardous material – material that has been determined to pose an unreasonable risk to health, safety and property when transported.

Hazardous Waste – Any waste material listed or identified in title 40 CFR, part 261, sub-part C and D or exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity also defined in Part 261.

Manifest – A legal document containing required information, which has to accompany shipments of hazardous waste or Class 1 – Industrial solid waste transported on public roads or thoroughfares.

Mixed waste – A radioactive waste that is also a hazardous waste.

Permit – A written document issued by the Environmental Protection Agency (EPA) or the Texas Commission on Environmental Quality (TCEQ) that, by its conditions, authorizes the construction, installation, modification, or operation of a specified municipal hazardous waste or industrial solid waste storage, processing, or disposal facility in accordance with specified limitations.

Placard – Diamond shaped color coded signs placed on the outside of transporting vehicles indicating the hazards of the cargo.

Satellite Accumulation area –An area, system, or structure used for temporary accumulation of hazardous waste prior to transport to the central accumulation area.

Waste Handling Area – The area used to log in and prepare appropriate labels for material collected as Chemical Waste prior to moving into the Central Accumulation Area.

Appendix 2

EPA HAZARDOUS WASTE CODES

Code Waste **description**

Characteristic Hazardous Waste

D001 Ignitable waste-A solid exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has a flash point less than 60oC(140oF) as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash Closed C p Tester, using the method specified in ASTM Standard D-3278-78, or as determined by an equivalent test method approved by the Administrator under procedures set forth in 40 CFR Part 260.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR Part 173 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under 40 CFR Part 260. (4) It is an oxidizer as defined in 49 CFR Part 173.

D002 Corrosive waste-A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in 40 CFR Part 260.

(2) It is a liquid and corrodes steel (SAE 1020) AT A RATE GREATER THAN 6.35 MM (0.25 inch) per year at a test temperature of 55 C (130 F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01069 or an equivalent test method approved by the Administrator under the procedures set forth in 40 CFR Part 260.

D003 Reactive waste: A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.
(2) It reacts violently with water.
(3) It -forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present danger to human health or the environment.
(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
(6) It is capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure
(8) It is a forbidden explosive, a Class A explosive, or a Class B explosive as defined in 49 CFR Part 173.

EP Toxicity- A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in 40 CFR Part 261 Appendix 11 or equivalent methods approved by the Administrator under the procedures set forth in 40 CFR Part 260, the extract from a representative sample of the waste contains any of the contaminants listed as D004 thru D017 at a concentration equal to or greater than the respective value given. Where the waste contains less than 0,5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

Waste Description, 2009

Code	Description	Maximum Concentration (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	**Endrin** (1.2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,(endo-5,8-dimethano-naphthalene)	0.02
D013	Lindane (1,2,3,4,5,6-hexa-chlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1- trichloro2,2 bis[p-rnethoxyphenyl]ethane)	10.0
D015	Toxaphene (C10H10C8, technical chlorinated camphene, 67-69 percent chlorine)	0.5
D016	2,4-D(2,4-dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP Silvex (S2,4,5-trichlorophenoxypropionic acid)	1.0

Hazardous Waste from Nonspecific Sources

F001 The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride and chlorinated fluorocarbons and all spent solvent mixtures/blends used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures

F002 The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-tricliloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2, trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

F003 The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above
non-halogenated solvents, and a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and FOO5; and still bottoms from the recovery of these spent solvents and spent solvent mixtures

F004 The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing before use a total 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those spent listed in F001, F002, and FOO5; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

F005 The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2nitropropane; all spent solvent
mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in FOO1 F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures

F006 Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) till plating on steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum

F007 Spent cyanide plating bath solutions from electroplating operations

F008 Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process

F009 Spent stripping and cleaning bath solutions from electroplating operations were cyanides are used in the process.

F010 Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process

F011 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations

F012 Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process

F019 Wastewater treatment sludges from the chemical conversion coating of aluminum

F020 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production (if hexachlorophene from highly purified 2,4,5-trichlorophenol.)

F021 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce derivatives

F022 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta- or hexachlorobenzenes under alkaline conditions

F023 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlotophenol.)

F024 Wastes including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having a carbon content from one to five, utilizing free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent desiccants,

wastewater, wastewater treatment sludges, spent catalysts, and "K" listed wastes-Hazardous Wastes from Specific Sources.)
F026 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta, or hexachlorobenzene under alkaline conditions

F027 Discarded unused formulations containing tri, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from pre-purified 2,4,5-trichlorophenol as the sole component.)

F028 Residues resulting from the incineration or thermal treatment of soil contaminated with EPA hazardous waste nos. F020, F021, F022, F023, F026, and F027

Discarded Commercial Chemical Products, Off-Specification Species, Container Residuals, and Spill Residues Thereof - Acute Hazardous Waste

Code	Waste Description
P023	Acetaldehyde, Chloro-
P002	Acetamide, N- (aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-[(methylcarbamoyl) oxylthio-, methyl ester
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	4-alpha-Aminopyridine
P009	Ammonium picrate
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl
P036	Arsenous dichloride, phenyl-
P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-

P028 Benzene, (chloromethyl)-
P042 1,2-Benzenediol, 4[1-hydroxy -2-(methylamino)ethyl]-
P046 Benzeneethanamine, alpha, alphadimethyl-
P014 Benzenethiol
P001 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-l-phenylbutyl)-and salts
P028 Benzyl chloride
P015 Beryllium dust
P016 Bis(chloromethyl)ether
P017 Bromoacetone
P018 Brucine
P021 Calcium cyanide
P022 Carbon disulfide
P022 Carbon disulfide
P095 Carbonic dichloride
P023 Chloroacetaldehyde
P024 p-Chloroaniline
P029 Copper cyanide
P030 Cyanides (soluble cyanide salts), not otherwise specified
P031 Cyanogen
P033 Cyanogen chloride
P034 2-Cyclohexyl-4,6-dinitrophenol
P036 Dichlorophenylarsine
P037 Dieldrin
P038 Diethylarsine
P041 Diethyl-p-nitrophenyl phosphate
P040 O,O-Diethyl O-pyrazinylphosphorothioate
P043 Diisopropyl fluorophosphates (DEP)
P004 1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1-alpha, 4-alpha. 4a-beta, 5-alpha, 8-alpha, 8abeta)-

P060 1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro1,4,4a,5,8,8a-hexahydro-(1-alpha, 4-alpha, 4a-beta, 5-beta, 8-beta, 8abeta)-

P037 1,2,3,4,10,10-Hexahydro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydroendo,exo-1,4,5,8-dimethanonaphthalene

P051 1,2,3,4,10,10-Hexahydro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydroendo,endo-,4,5,8-dimethanonaphthalene

P060 Hexachlorohexahydro-exoexodemethanonaphthalene
P044 Dimethoate
P045 3,3-Dimethyl-1-(methylthio)- 2-butanone, O-[(methylamino)carbonyloxime
P046 alpha,alpha-Dimethylphenethylamine
P047 4,6-Dinitro-o-cresol and salts
P048 2,4-Dinitrophenol
P020 Dinoseb

P085 Diphosphoramide, octamethyl-
P039 Disulfoton
P049 2,4-Dithiobiuret
P050 Endosulfan
P088 Endothal
P051 Endrin
P042 Epinephrine
P101 Ethylcyanide
P054 Ethyleneimine
P097 Famphur
P056 Fluorine
P057 Fluoroacetamide
P058 Fluoroacetic acid, sodium salt
P065 Fulminic acid, mercury (2+)salt
P059 Heptachlor
P062 Hexaethyltetraphosphate
P116 Hydrazinecarbothioamide
P068 Hydrazine, methyl-
P063 Hydrocyanic acid
P063 Hydrogen cyanide
P096 Hydrogen phosphide
P064 Isocyanic acid, methyl ester
P060 Isodrin
P007 3 (sH) -Isoxazolone, 5-(aminomethyl)-
P092 Mercury, (acetato-O)phenyl
P065 Mercury fulminate
P082 Methamine,N-methyl-N-nitroso-
P016 Methane, oxybis(chloro-
P112 Methane, tetranitro-
P118 Methanethiol, trichloro-P050 6,9-Methano-2,4,3-benzodioxathiepen,6,7,8,9 10,10-hexachloro-1,5,5a,6,9,9ahexahydro-3-oxide
P059 4,7-Methano- 1H-indene,1,4,5.6,7,8,8-heptachloro-3a,4,7,7atetrahydro-
P066 Methomyl
P067 2-Methylaziridine
P068 Methyl hydrazine
P064 Methyl isocyanate
P069 2-Methyllactonitrile
P071 Methyl parathion
P072 alpha-Naphthylthiourea
P073 Nickel carbonyl
P073 Nicotine and salts
P076 Nitric oxide
P077 p-Nitroanilinc
P078 Nitrogen dioxide
P076 Nitrogen oxide NO
P078 Nitrogen oxide N02

P081 Nitroglycerine
P082 N-Nitrosodimethylamine
P084 N-Nitrosomethylvinylamine
P074 Nickel cyanide
P085 Octamethy lpyrophosophoramide
P087 Osmium oxide
P087 Osmium tetroxide
P088 7-Oxabicyclo[2.2.llheptane-2,3-dicarboxylic acid
P089 Parathion
P034 Phenol, 2-cyclohexyl-4,6-dinitro-
P048 Phenol, 2,4-dinitro
P047 Phenol, 2-methyl-4,6-dinitro- and salts
P020 Phenol,2-(I1-methylpropyl)-4,6-dinitro-
P009 Phenol, 2,4,6-trinitro-, ammonium salt
P092 Phenylmercury acetate
P093 Phenylthiourea
P094 Phorate
P095 Phosgene
P096 Phosphine
P041 Phosphoric acid, diethyl 4-nitrophenylester
P039 Phosphorodithioic acid, O,O-diethylS-[2-(ethylthio)ethyl] ester
P094 Phosphorodithioic acid, O,O-diethylS-[(ethylthio)methyl] ester
P044 Phosphorodithioic acid, O,O-dimethyl S [2-(methylamino)-2-Oxoethyl]ester
P043 Phosphorofluoric acid, bis(lmethylethyl)-ester
P089 Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyt) ester
P040 Phosphorothioic acid, O,O-diethyl-O-pyrazinyl ester
P097 Phosphorothioic acid, O-[4-(dimethylamino)sulfonylphenyl] O,O-dimethyl ester
P071 Phosphorothioic acid, O,O-dimethylO-(4-nitrophenyl) ester
P110 Plumbane, tetraethyl-
P098 Potassium cyanide
P099 Potassium silver cyanide
P070 Prop anal,2-methyl-2-(methylthio)-O-[(methylamino)Carbonyl]oxime
P101 Propanenitrile
P027 Propanenitrile,3-chloro
P069 Propanenitrile, 2-hydroxy-2methyl
P081 1,2,3-Propanetriol, trinitrate
P017 2-Propanone, 1-bromo-P102 Propargyl alcohol
P003 2-Propenal
P005 2-Propen-l-ol
P067 1,2-Propylenimine
P102 2-Propyn-l-ol
P008 Pyridinamine
P075 Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts
P111 Pyrophosphoric acid, tetraethyl ester
P103 Selenourea
P104 Silver cyanide

P105 Sodium azide
P106 Sodium cyanide
P107 Strontium sulfide
P108 Strychnidin-10-one, and salts
P018 Strychnidin-10-one, 2,3dimethoxy-
P108 Strychnine and salts
P115 Sulfuric acid, thallium(I) salt
P109 Tetraethy1dithiopyrophosphate
P110 Tetraethyl lead
P111 Tetraethylpyrophosphate
P112 Tetranitromethane
P062 Tetraphosphoric acid, hexaethyl ester
P113 Thallic oxide
P113 Thalliuni(III) oxide
P114 Thallium(I) selenite
P115 Thallium(I) sulfate
P109 Thiodiphosphoric acid, tetraethyl ester
P045 Thiofanox
P049 Thioimidodicarbonic diazide
P014 Thiophenol
P116 Thiosemicarbazide
P026 Thiourea, (2-chlorophenyl)-
P076 Thiourea, 1-naphthalenyl-
P093 Thiourea, phenyl-
P123 Toxaphene
P118 Trichloromethanethiol
P119 Vanadic acid, ammonium salt
P120 Vanadium(V) oxide
P084 Vinylamine, N-methyl-nitroso-
P001 Warfarin
P121 Zinc cyanide
P122 Zinc phosphide

Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof-Toxic Waste

U001 Acetaldehyde
U034 Acetaldehyde. trichloro-
U187 Acetamide, N-(4-ethoxyphenyl)-
U005 Acetamide, N-914-fluoren-2-yl
U112 Acetic acid, ethyl ester
U 144 Acetic acid, lead salt
U214 Acetic acid, thallium (1+) salt
U232 Acetic acid, (2,4,5-trichlorophenoxy)-
U002 Acetone
U003 Acetonitrile

U004 Acetophenone
U005 2-Acetylaminofluorene
U006 Acetyl chloride
U007 Acrylamide
U008 Acrylic acid
U009 Acrylonitrile
U011 Amitrole
U012 Aniline
U014 Auramine
U015 Azaserine
U010 Azirino(2', 3':3,4) pyrrolo-[1,2-a]indole-4,7-dione, 6-amino-8[((aminocarbonyl)ocy)methyl]-l,la,2,8,8a,8b-hexahydro-8amethoxy-5-methyl-

U157 Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016 3,4-Benzacridine
U017 Benzal chloride
U192 Benzamide, 3,5-dichloro-N-(l,ldiethyl-2-propynyl)-
U018 Benz[a]anthracene
U094 Benz[a] anthracene, 7,12-d.imethyl-
U012 Benzenamine
U014 Benzenamine,4,4'-carbonimidoylbis(N,N-dimethyl-)
U049 Benzenamine, 4-chloro-2-methyl-
U093 Benzenamine,N,N-dimethyl-4-(phenylazo)-
U328 Benzenamine, 2-methyl-
U353 Benzenamine, 4-methyl-
U158 Benzenamine, 4,4'-methylenebis(2-chloro-)
U222 Benzenamine, 2-methyl-, hydrochloride
U181 Benzenamine, 2-methyl-5-nitro
U019 Benzene
U038 Benzeneacetic acid, 4-chloroalpha-(4-chlorophenyl)-alpha-hydroxy,ethyl ester
U030 Benzene, 1-bromo-4-phenoxy-
U035 Benzenebutanoic acid,4-[bis(2-chloroethyl) amino]-
U037 Benzene, chloro-
U221 Benzenediamine. ar-methyl
U028 1,2-Benzenedicarboxylic acid, bis(2-ethylhexy) ester
U069 1,2-Benzenedicarboxylic acid, dibutylester
U088 1,2-Benzenedicarboxylic acid, diethylester
U102 1,2-Benzenedicarboxylic acid, dimethylester
U107 1.2-Benzenedicarboxylic acid,di-n-octyl ester
U070 Benzene, 1,2-dichloro-
U071 Benzene, 1,3-dichloro-
U072 Benzene, 1,4-dichloro-
U060 Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U017 Benzene, (dichloromethyl)-
U223 Benzene, 1,3-diisocyanatomethyl-
U239 Benzene, dimethyl-

U201 1,3-Benzenediol
U127 Benzene, hexachloro-
U056 Benzene, hexahydro-
U220 Benzene, methyl-
U105 Benzene, 1-methyl-2,4-dinitro-
U106 Benzene, 2-methyl-1,3-dinitro-
U055 Benzene, (1-methylethyl)-
U169 Benzene, nitro-
U183 Benzene, pentachloro-
U185 Benzene, pentachloronitro-
U020 Benzenesulfonic acid choride
U020 Benzenesulfonyl chloride
U207 Benzene, 1,2,4,5-tetrachloro-
U061 Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247 Benzene, 1,1'-(2.2,2-trichloroethylidene)[4-ethoxy-
U023 Benzene, (trichloromethyl)-
U234 Benzene, 1,3,5-trinitro-
U021 Benzidine
U202 1,2-Benzisothiazol-3-(2H) one,1,1-dioxide and salts
U203 1,3-Benzodioxole, 5-(2-propenyl)-
U141 1,3-Benzodioxole, 5-(l-propenyl)-
U090 1,3-Benzodioxole, 5-propyl
U064 Benzo[rst]pentaphene
U022 Benzo[a]pyrene
U197 p-Benzoquinone
U023 Benzotrichloride
U085 2,2'-Bioxirane
U021 (l,l'Biphenyl)-4,4'diamine
U073 (1,1'-Biphenyl)-4,4'-diamine, 3,3-dichloro-
U091 (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095 (1,1'-Biphenyl)-4,4'-diamine, 3.3'-dimethyl-
U027 Bis(2-chloroisopropyl)ether
U024 Bis(2-chloromethoxy)ethane
U028 Bis(2-ethylhexyl)phthalate
U225 Bromoform
U030 4-Bromophenyl phenyl ether
U128 1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172 1,Butanamine, N-butyl-N-nitroso-
U031 1-Butanol
U159 2-Butanone
U160 2-Butanone peroxide
U053 2-Butenal
U074 2-Butene, 1,4-dichloro-
U143 2-Butenoic acid, 2-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methy -l-oxobutoxy) methyl-12,3,5,7a-tetrahydro-1-pyrrolizin-1-yl ester,[1S-[alpha (Z),7(2S, R),7aa;-Pha])-

U031 n-Butyl alcohol
U136 Cacodylic acid
U032 Calcium chromate
U238 Carbamic acid, ethyl ester
U178 Carbamic acid, imethylnitroso-, ethylester
U097 Carbamic chloride, dimethyl-
U114 Carbamodithioic acid, 1,2-ethanediylbis-, salts and esters
U062 Carbonic acid, dithallium(1+) salt
U033 Carbonic difluoride
U156 Carbonochloridic acid, methyl ester
U033 Carbon oxyfluoride
U211 Carbon tetrachloride
U034 Chloral
U035 Chlorambucil.
U036 Chlordane
U026 Chlornaphazine
U037 Chlorobenzene
U039 p-Chloro-m-cresol
U041 I-Chloro-2,3-epoxypropane
U042 2-Chloroethyl vinyl ether
U044 Chloroform
U046 Chloromethyl methyl ether
U047 beta-Chloronaphthalene
U048 o-Chlorophenol
U049 4-Chloro-o-toluidine, hydrochloride
U032 Chromic acid, calcium salt
U050 Chrysene
U051 Creosote
U052 Cresole (Cresylic acid)
U053 Crotonaldehyde
U055 Cumene
U246 Cyanogen bromide
U197 2,5-Cyclohexadiene-1, 4-dione
U056 Cyclohexane
U057 Cyclohexanone
U130 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058 Cyclophosphamide
U240 2.4-D, salts and esters
U059 Daunomycin
U060 DDD
U061 DDT
U062 Diallate,
U063 Dibenz[a,h]anthracene
U064 Dibenzo[a,i]pyrene
U066 1,2-Dibromo-3-chloropropane
U069 Dibutyl phthalate

U070 o-Dichlorobenzene
U071 m-Dichlorobenzene,
U072 p-Dichlorobenzene
U073 3,3'-Dichlorobenzidine
U074 1,4-Dichloro-2-butene
U075 Dichlorodifluoromethane
U078 1,1-Dichloroethylene
U079 1,2-Dichloroethylene
U025 Dichloroethyl ether
U081 2,4-Dichlorophenol
U082 2,6-Dichlorophenol
U240 2,4- Dichlorophenoxy acetic acid salts and esters
U083 1,2-Dichloropropane
U084 1,3-Dichloropropene
U085 1,2:3,4-Diepoxybutane
U108 1,4-Diethyleneoxide
U086 N,N-Diethylhydrazine
U087 O,O-Diethyl-S-methyl-dithiophosphate
U088 Diethyl phthalate
U089 Diethylstilbestrol
U090 Dihydrosafrole
U091 3,3'-Dimethoxybenzidine
U092 Dimethylamine
U093 Dimethylaminoazobenzene
U094 7,12-Dimethylbenz[a]anthracene
U095 3,3'-Dimethylbenzidine
U096 alpha,alpha-Dimethylbenzylhydroperoxide
U097 Dimethylcarbamoyl chloride
U098 1,1-Dimethylhydrazine
U099 1,2- Dimethylhydrazine
U101 2,4-Dimethylphenol
U102 Dimethyl phthalate
U103 Dimethyl sulfate
U105 2,4-Dinitrotoluene
U106 2,6-Dinitrotoluene
U107 Di-n-octyl phthalate
U108 1,4-Dioxane
U109 1,2-Diphenylhydrazine
U110 Dipropylamine
U111 Di-n-propyinitrosamine
U001 Ethanal
U174 Ethanamine, N-ethyl-N-nitrosoU1551,2-Ethanediamine, N,N-dimethyl-N'-(2-thienylmethyl)-
U067 Ethane, 1,2-dibromo-
U076 Ethane, 1.1-dichloro-
U077 Ethane, 1,2-dichloro-

U131 Ethane, hexachloro-
U024 Ethane, 1, 1'-[methylenebis(oxy)]bis[2-chloro-
U117 Ethane, 1,1'-oxybis-
U025 Ethane, 1,1'-oxybis[2-chloro-
U184 Ethane, pentachloro-
U208 Ethane, 1,1,1,2-tetrachloro
U209 Ethane, 1, 1,2,2-tetrachloro
U218 Ethanethioamide
U227 Ethanol, 2-ethoxy-
U359 Ethane, 1, 1,2-trichloro-
U173 Ethanol, 2,2'-(nitrosoimino)bis-
U004 Ethanone, 1-phenyl-
U043 Ethene, chloro-
U042 Ethene, (2-chloroethoxy)-
U078 Ethene, 1,1-dichloro-
U079 Ethene, 1,2-dichloro-,(E)-
U210 Ethene, tetrachloro
U228 Ethene, trichloro
U112 Ethyl acetate
U113 Ethyl acrylate
U238 Ethyl carbamate
U038 Ethyl 4,4'-dichlorobenzilate
U114 Ethylenebisdithiocarbamic acid, saltsand esters
U067 Ethylene dibromide
U077 Ethylene dichloride
U359 Ethylene glycol monoethylether
U115 Ethylene oxide
U116 Ethylene thiourea
U117 Ethyl ether
U076 Ethylidene dichloride
U118 Ethyl methacrylate
U119 Ethylmethanesulfonate
U120 Fluoranthene
U122 Formaldehyde
U123 Formic acid
U124 Furan
U125 2-Furancarboxaldehyde
U147 2,5-Furandione
U213 Furan, tetrahydro-
U125 Furfural
U124 Furfuran
U206 D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosourcido)-
U126 Glycidylaldehyde
U163 Guanidine, N-methyl-N'-nitro-Nnitroso-
U127 Hexachlorobenzene
U128 Hexachlorobutadiene

U129 Hexachlorocyclohexane(gammaisomer)
U130 Hexachlorocyclopentadiene
U131 Hexachloroethane
U132 Hexachlorphene
U243 14exachloropropene
U133 Hydrazine
U086 Hydrazine, 1,2-diethyl-
U098 Hydrazine, 1, 1 -dimethyl-
U099 Hydrazine, 1,2,-dimethyl
U109 Hydrazine, 1,2 -diphenyl
U134 Hydrofluoric acid
U 134 Hydrogen fluoride
U135 Hydrogen sulfide
U096 Hydroperoxide,l-methyl-l-phenylethyl-
U136 Hydroxydimethylarsine xide
U116 2-Imidazolidinethione
U137 Indeno[1,2,3-cd]pyrene
U139 Iron dextran
U190 1,3-Isobenzofurandione
U140 Isobutyl alcohol
U141 Isosafrole
U142 Kepone
U143 Lasiocarpine
U144 Lead acetate
U146 Lead, bis(acetate-O)tetrahydroxytri-
U145 Lead phosphate
U146 Lead subacetate
U129 Lindane
U147 Maleic anhydride
U148 Maleic hydrazide
U149 Malonitrile
U150 Melphalan
U151 Mercury
U152 Methacrylonitrile
U092 Methanamine, N-methyl-
U029 Methane, bromo-
U045 Methane, chloro-
U046 Methane, chloromethoxy-
U068 Methane, dibromo-
U080 Methane, dichloro-
U075 Methane, dichlorodifluoro-
U138 Methane, iodo-
U119 Methanesulfonic acid, ethyl ester
U211 Methane, tetrachloro-
U153 Methanethiol
U225 Methane, tribromo-

U044 Methane, trichloro-
U121 Methane, trichlorofluoro-
U123 Methanoic acid
U154 Methanol
U155 Methapyrilene
U142 1,3,4-Metheno-2Hcyclobutal[cd]pentalen-2-one,l,la,3,3a,4,5,5a,5b,6-decachlorooctahydro-
U247 Methoxychlor
U154 Methyl alcohol
U029 Methyl bromide
U186 1-Methylbutadiene
U045 Methyl chloride
U156 Methylchlorocarbonate
U226 Methylchloroform
U157 3-Methylcholanthrene
U158 4,4'-Methylenebis(2-chloroaniline)
U068 Methylene bromide
U080 Methylene chloride
U159 Methyl ethyl ketone
U160 Methyl ethyl ketone peroxide
U138 Methyl iodide
U161 Methyl isobutyl ketone
U162 N-Methyl-N'-nitro-N-nitrosoguanidine
U161 4-Methyl-2-pentanone
U164 Methylthiouracil
U010 Mitomycin C
U059 5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-Iyxo-hexopyranosyl)oxyl]-7,8,9 10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U165 Naphthalene
U047 Naphthalene, 2-chloro-
U166 1,4-Naphthalenedione
U236 2,7-Naphthatenedisulfonic acid,3,3'-dimethyl-(1,I'-biphenyl)-4,4' diyl)]-bis(azo)bis(S-amino-4-hydroxy)-,tetrasodium salt
U166 1,4-Naphthoquinone
U167 alpha-Naphthylamine
U168 beta- Naphthylamine
U026 2-Naphthylamine, N,N'-bis(2-chloromethyl)-
U167 I-Naphthylenamine
U168 2-Naphthylenamine
U217 Nitric acid, thallium(l+) salt
U169 Nitrobenzene
U170 p-Nitrophenol
U171 2-Nitropropane
U172 N–Nitrosodi-n-butylamine
U173 N-Nitrosodiethanolamine
U 174 N-Nitrosodiethylamine

U176 N-Nitroso-N-ethylurea
U 177 N-Nitroso-N-methylurea
U179 N-Nitroso-N-methylurethane
U179 N-Nitrosopiperidine
U180 N-Nitrosopyrrolidine
U181 5-Nitro-o-toluidine
U193 1,2-Oxathiolane,2,2-dioxide
U058 2H-1,3,2-Oxazaphosphorin-2-amine,N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U115 Oxirane
U126 Oxiranecarboxyaldehyde
U041 Oxirane, (chloromethyl)-
U182 Paraldehyde
U183 Pentachlorobenzene
U184 Pentachloroethane
U185 Pentachloronitrobenzene (PCNB)
U242 Pentachlorophenol
U186 1,3-Pentadiene
U187 Phenacetin
U188 Phenol
U048 Phenol, 2-chloro-
U039 Phenol, 4-chloro-3-methyl-
U081 Phenol,2,4-dicliloro-
U082 Phenol,2,6-dichloro-
U089 Phenol,4.4'-(1,2-diethyl- 1,2-ethenediyl)bis-, (E)-U101 Phenol,2,4-dimethyl-
U052 Phenol, methyl-
U132 Phenol,2,2'-methylenebis[3,4,6-trichloro-
U170 Phenol, 4-nitro-
U242 Phenol, Pentachloro-
U212 Phenol, 2,3,4,5-tctrachloro
U230 Phenol, 2,4,5-trichloro-
U231 Phenol,2,4,6-trichloro-
U150 L-Phenylalanine,4-[bis(2-chloroethyl)amino]-
U145 Phosphoric acid, lead salt
U087 Phosphorodithioic acid, O,O-diethyl-,S-methyl-, ester
U189 Phosphorous sulfide
U190 Phthalic anhydride
U191 2-Picoline
U179 Piperidine, 1-nitroso-
U192 Propamide
U 194 1-Propanamine
U111 1-Propanamine, N-nitroso-N-N-propyl-
U101 1-Propanamine, N-propyl-
U066 Propane, 1,2-dibromo-3-chloro-
U149 Propanedinitrile
U171 Propane,2,2'-oxybis[2-chloro-
U193 1,3-Propane sulfone

U235 1-Propanol,2,3-dibromo-, phosphate(3:1)
U140 1-Propanol, 2-methyl-
U002 2-Propanone
U084 1-Propane, 1,3-dichloro-
U152 2-Propanenitrile,2-methyl-
U007 2-Propenamide
U243 1-Propene, hexachloro-
U009 2-Propenenitrile
U008 2-Propenoic acid
U113 2-Propenoic acid, ethyl ester
U118 2-Propenioc acid, 2-methyl-, ethyl ester
U162 2-Propenoic acid, 2-methyl-, methylester
U233 Propionic acid, 2-(2,4,5-trichlorophenoxy)-
U194 n-Propylamine
U083 Propylene dichloride
U148 3.6-Pyridazinedione, 1,2-dihydro-
U196 Pyridine
U191 Pyridine, 2-methyl-U237 2,4(l H,3H)-Pyrimidinedine,5-[bis(2-chloroethyl)amino]
U164 4-(1 H)-Pyrimidinone, 2,3 dihydro-6-methyl-2-thioxo-
U180 Pyrrolidine, 1-nitroso-
U200 Reserpine
U201 Resorcinol
U202 Saccharin and salts
U203 Safrole
U204 Selenious acid
U204 Selenium dioxide
U205 Selenium sulfide
U015 L-Serine, diazoacetate (ester)
U233 Silvex
U206 Streptozotocin
U103 Sulfuric acid, dimethyl ester
U189 Sulfur phosphide
U232 2,4,5-T
U207 1,2,4,5-Tetrachlorobenzene
U208 1,1,1,2-Tetrachloroethane
U209 1,1,2,2-Tetrachloroethane
U210 Tetrachloroethylene
U212 2,3,4,6-Tetrachlorophenol
U213 Tetrahydrofuran
U214 Thallium(l) acetate
U215 Thallium(l) carbonate
U216 Thallium chloride
U217 Thallium(l) nitrate
U218 Thioacetamide
U153 Thiomethanol
U244 Thioperoxydicarbonic diamide,tetramethyl-

U219 Thiourea
U244 Thiuram
U220 Toluene
U221 Toluenediamine
U223 Toluene diisocyanate
U328 o-Toluidine
U353 p-Toluidine
U222 o-Toluidine hydrochloride
U011 1H-1,2,4-Triazol-3-amine
U226 1, 1, 1-Trichloroethane
U227 1, 1,2-Trichlorethane
U228 Trichloroethylene
U121 Trichloromonofluoromethane
U230 2,4,5-Trichlorophenol
U231 2,4,6-Trichlorophenol
U234 sym-Trinitrobenzene
U182 1,3,5-Trioxane,2,4,6-trimethyl-
U235 Tris(2,3-dibromopropyl) phosphate
U236 Trypan blue
U237 Uracil mustard
U176 Urea, N-ethyl-N-nitroso-
U177 Urea, N-methyl-N-nitroso
U043 Vinyl chloride
U248 Warfarin, when present in concentrations of 0.3% or less
U239 Xylene
U200 Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester
U249 Zinc phosphide, when present at concentrations of 10% or less

DEA Controlled Substances

Summary

Items identified by the US Department of Justice, Drug Enforcement Administration (DEA) and the Texas Department of Public Safety (DPS) as controlled substances are subject to licensing, registration, storage, security, use and disposal requirements. See a list of DEA controlled substances.

Principal Investigators (PIs) using controlled substances in their laboratory research (including animal research) are subject to state and federal regulatory requirements.

Licensing and Registration

Since the University cannot, by law, maintain a campus wide registration for controlled substances, it is the responsibility of each PI to obtain appropriate licenses and registration, and to adhere to applicable state and federal regulatory requirements when working with controlled substances. PIs must register their controlled substance(s) with the federal DEA as well as the Texas DPS.

1. **State DPS Licensing:** Approved applicants will receive a one-year license to work with controlled substances in a manner consistent with the approved use(s) described in the application.
2. **Federal Registration**: Once you complete your state DPS Registration, you will need to complete a DEA Controlled Substance registration application. DEA registrations remain active for a 1-year period.
3. **Notification:** Copies of all registration and licensing related correspondence must be kept by the PI and additional copes sent to Department of Risk Management.

The PI shall complete a Controlled Substances Self Evaluation annually. The forms, indicating corrective actions taken, should be kept by the PI for at least one year and a copy should be submitted to Department of Risk Management.

Storage and Security Controls

Controlled substances possessed, kept, or otherwise stored in a manner or location not in compliance with state or federal law is subject to seizure by and forfeiture to federal or state officials. Failure to comply with applicable requirements may also result in a suspension of purchasing privileges and disciplinary actions.

In order to guard against theft or diversion, all controlled substances - regardless of schedule ¬must be kept under lock and key, and accessible only to authorized personnel. The number of authorized staff must be kept to the minimum essential for operation, and the stocks of controlled substances to the smallest quantity needed.

All controlled substances must be kept locked in their storage location except for the actual time required for authorized staff to remove, legitimately work with, and replace them.

Controlled substances must be stored in a substantially constructed cabinet. This cabinet must be kept locked at all times. The room in which the cabinet is located must have limited access during working hours and provide security after hours.

Disposal

Controlled substances may only be disposed by returning to a reputable Pharmaceutical return company. Expired material or unused product must be accumulated and stored under lock and key until ready for disposal. Controlled substances injected into research animals, consumed in a reaction, **or irrecoverably** comingled (if part of the research protocol) go into a hazardous waste stream for disposal through the University's routine waste disposal program.

Reporting of Loss, Destruction, Theft, or Unauthorized Use

Thefts, suspected thefts, unauthorized uses, or other losses of any controlled substance must be reported to the Lamar University Police Department (LUPD) and EHS upon discovery. Registrants must also document the incident to the Texas DPS and federal DEA. See DEA Theft or Loss of Controlled Substances.

Recordkeeping

PIs are required by law to maintain complete and accurate inventory records for all controlled substances. These records must be kept separately from all other records and documents, in or near the primary work area, and be available for inspection during regular work hours. **The use of codes, symbols, or foreign languages in identifying a controlled substance or person in the record is prohibited.** In the event that any controlled substances are lost, destroyed, or stolen, the kind and quantity of the material and the date of discovery of such loss must be recorded in detail. All records must be maintained by PIs for a period of at least two years from the date of the last recorded transaction.

The recordkeeping system should include the following information:

1. Receipt of Controlled Substance: A separate and current record on the receipt of controlled substances, indicating date received, name and address of supplier, and the type, strength or concentration, and amount of the controlled substances received. Each record must be signed by the person receiving the controlled substance.

2. Use of Controlled Substances: A separate and current record for the storage and use of each controlled substance, indicating the date, laboratory building and room, specific research experiment, controlled substance' s application in the research, and type, strength and quantity of each controlled substance use or disposal. By noting starting volume or mass of substance in the container, each use or disposal is a subtraction from the starting quantity, and the running (decreasing) amount should equal the total amount remaining on-hand. Each record of use must be signed by the person working with the controlled substance.
3. Inventory of Controlled Substances: A complete and accurate inventory of the stock of controlled substances within each registrant's laboratory must be performed initially. The type, strength, and quantity of all controlled substances must be recorded at this time. The person conducting the inventory must also date and sign the record. After the initial inventory is taken, a new inventory of all stocks of controlled substances on hand should be conducted at least every two years. PIs should be sure that the inventory can be reconciled to the records of receipt, use and disposal at all times.

Note: the guidance information above is not intended to cover all applicable parts of the DEA and DPS rules. For further information on the requirements for controlled substances review the DEA and DPS websites.