

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](#)

Reviewed: 01/28/21

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 (Texas Administrative Code Title 30 Part 1, chapter 335).

Lamar University is a "Very Small Quantity Generator" (VSQG) (EPA) or "Conditionally Exempt Small Quantity Generator" (CESQG) (TCEQ) 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 40 CFR, and the notification requirements of section 3010 of RCRA.

Please note that if we exceed our quotas to maintain our VSQG status then the paperwork and forms required by all who produce or purchase chemicals will be expanded dramatically.

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 Environmental Health and Safety and 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

Hazardous Chemical Waste Determination

Material becomes a waste when it is no longer useful as determined by the 'owner' and shall be requested for disposal. 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 of the waste.

(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 two storage units within the containment building.

The chemical containment/storage building is located adjacent to 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 deterioration 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

Nonhazardous waste:

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.

Labelling Requirements:

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.

If a chemical waste contains a material with hard-to-find Safety Data Sheets (e.g. an obscure proprietary material), then the Waste Generator shall supply an SDS for the Hazardous Waste Coordinator.

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 within 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 EHS & Risk Management Hazardous Waste Coordinator. Diagrams of these labels are shown in the "Labels" section. **Use of this label is encouraged.**

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 in the Lamar University Chemical Hygiene Plan.

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.**

Needles, and needle-containing equipment (e.g. syringes with needles installed), are considered sharps waste, and thus medical waste. They must be disposed of in accordance with Texas regulation of health care facilities. In practice, this involves disposal via the University's sharps containers, which are then sent back to the sharps container supplier, which safely processes the waste. The Hazardous Waste Disposal Coordinator can supply further details.

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 protective 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 Non-Hazardous Ignitable	Reactive Toxic Oxidizer
Other (explain)	
Waste Generator information	
Department	
Building	

HAZARDOUS WASTE

Lamar University

EPA ID No. TXD053623179

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

Emergency Procedures

All employees shall be informed of hazardous materials they might use or be exposed to at work. The program shall also include recorded training on handling spills and other emergencies. Safety Data Sheets are a source of this information and shall be maintained in a readily accessible area or database 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

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.

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

For up-to-date information, consult US CFR Title 40, Sub-parts C-E.

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 60°C(140°F) 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 Cup Test tir

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(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 (Toxicity Characteristic Leaching Procedure (TCLP) SW-846 Test Method 1311) 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

TABLE 1—MAXIMUM C

EPA HW No.¹	Contaminant	CAS No.²	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0

D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	35.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

§261.31 Hazardous wastes from non-specific sources.

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§260.20 and 260.22 and listed in appendix IX.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1 trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten 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	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1 trichloroethane, 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 ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in	(T)

	F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	
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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 ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms

the above spent solvents

F024 Process

F034 Wastewaters (except those that have not come into contact with process

I

F039 Leachate (liquids that have percolated through land disposed wastes) resulting (T)
from the disposal of more than one restricted waste classified as hazardous
under subpart D of this part. (Leachate resulting from the disposal of one or
more of the following EPA Hazardous Wastes and no other Hazardous Wastes
retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027,
and/or F028.)

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, alphasdimethyl-
P014 Benzenethiol
P001 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-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 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

P073 Nickel carbonyl
 P073 Nicotine and salts
 P076 Nitric oxide
 P077 p-Nitroaniline
 P078 Nitrogen dioxide
 P076 Nitrogen oxide NO
 P078 Nitrogen oxide NO₂
 P081 Nitroglycerine
 P082 N-Nitrosodimethylamine
 P084 N-Nitrosomethylvinylamine
 P074 Nickel cyanide
 P085 Octamethylpyrophosphoramide
 P087 Osmium oxide
 P087 Osmium tetroxide
 P088 7-Oxabicyclo[2.2.1]heptane-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-(1-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-diethyl S-[2-(ethylthio)ethyl] ester
 P094 Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
 P044 Phosphorodithioic acid, O,O-dimethyl S [2-(methylamino)-2-Oxoethyl]ester
 P043 Phosphorofluoric acid, bis(methylethyl)-ester
 P089 Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) 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-dimethyl O-(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-1-ol

P067 1,2-Propylenimine

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]-1,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-(1,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-(1-propenyl)-
 U090 1,3-Benzodioxole, 5-propyl
 U064 Benzo[rs]t]pentaphene
 U022 Benzo[a]pyrene
 U197 p-Benzoquinone
 U023 Benzotrichloride
 U085 2,2'-Bioxirane
 U021 (1,1'-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-methoxy-1-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-propylnitrosamine
 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 Hexachlorophene
U243 Hexachloropropene
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,1-methyl-1-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,1,1a,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(1+) 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-dicloro-
 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-tetrachloro
 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(1 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(I) acetate
U215 Thallium(I) carbonate
U216 Thallium chloride
U217 Thallium(I) 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 copies 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 are subject to seizure by and forfeiture to federal or state officials. Failure to comply with applicable requirements may also result in a suspension of

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.