

Hazardous Materials Requiring Institutional Approval  
**Office of Environmental Health, Safety & Risk Management**

**INSTRUCTION: Based on the health effects, regulatory status, or potential handling requirements, several classes of hazardous materials or devices require specific institutional approval prior to purchase. If a substance or device is listed below or specifically in the attached appendices contact the institutional contact prior to placing an order for the hazardous material.**

---

List of Hazardous Materials

---

Biological “Select Agent or Toxin”  
Radioactive Materials:  
Radiation Producing Machine  
Military/ Other Chemical Agents of Concern  
Toxic/Extremely Hazardous Chemicals  
Controlled Substances  
Laser (class 3b or 4)  
Chemicals/Items prohibited by Fire code  
P-Listed Wastes

---

**Institutional Contact: Laboratory Safety Division**  
**Contact Phone: 210-458-6697/5807**

**DEFINITIONS**

HHS Select Agent or Toxin: A biological agent (bacterium, virus, fungus, etc.), or its toxin, conforming to the most current list published in 42 CFR § 73.3 or an overlap select agent or toxin as listed in 42 CFR § 73.4. See Appendix A.

USDA Select Agents or Toxins: A biological agent (bacterium, virus, fungus, etc.), or its toxin, conforming to the most current list published in 9 CFR § 121.3 or an overlap select agent or toxin as listed in 9 CFR § 121.4. See Appendix A.

USDA Plant Protection and Quarantine (PPQ) Select Agent or Toxin: A biological agent or its toxin determined to pose a severe threat to plant health or plant products and as listed in 7 CFR § 331.3 (a). See Appendix A.

Radioactive Materials: Any material (solid, liquid, or gas) that spontaneously emits radiation as defined in 25 TAC § 289.201(b)(80).

Radiation Producing Machine Any device capable of producing ionizing radiation and not an exempt machine (contact Laboratory Safety Division to confirm exempt status) as defined in 25 TAC § 289.201(b) (78).

Military / Other Chemical Agents of Concern: Any chemical agent that has been developed or may potentially be used as a weapon of mass casualty / destruction, explosive, or is otherwise of concern. See Appendix B.

Toxic/Extremely Hazardous Chemicals: Any substance with a threshold planning quantity (TPQ) of 10 pounds or less, as listed in the Extremely Hazardous Substance list as defined in 49 CFR § 302-304, 311, or 312 and cross-listed in the Texas Community Right-to-Know Act Chapter 505-507 of the Texas Health & Safety Code. See Appendix C.

Controlled Substances: Any substance regulated or specifically listed in 21 CFR Part 1300-1399. The Drug Enforcement Agency's Diversion Control Program regulates these substances. See Appendix D.

Class 3b or 4 laser: Any laser that permits human access during operation to levels of *visible* laser radiation in excess of limits listed in 25 TAC §289.301(d)(9) for Class 3a lasers, or access to levels of *invisible* laser radiation in excess of limits in 25 TAC §289.301(d)(7) for Class 1 lasers but less than limits contained in §289.301(d)(11) for Class 4 lasers is considered Class 3b. Any laser that permits human access during operation to levels of laser radiation in excess of limits contained in §289.301(d)(10) is considered Class 4. Commercially manufactured lasers are required by law to be sold with a laser class designation. Any modified or "home-built" laser must have its laser class determined by the UTSA Radiation Safety Officer before being put into use. See Appendix E.

Chemicals/Items prohibited by Fire code: The NFPA Fire Code prohibits certain materials from being used or stored in buildings categorized as business occupancies. All buildings housing laboratories at UTSA are categorized as business occupancies. See Appendix F

P-Listed Wastes: These chemicals are listed by EPA for purposes of waste disposal and are classified acute hazardous waste. See Appendix G

## Appendix A

### List of HHS/USDA Select Agents and Toxins under 42 CFR 73; 9 CFR 121; & 7 CFR 331

#### HHS Select Agents and Toxins

Abrin  
Botulinum neurotoxins  
Botulinum neurotoxin producing species of *Clostridium*  
Cercopithecine herpesvirus 1 (Herpes B virus)  
*Clostridium perfringens* epsilon toxin  
*Coccidioides posadasii/Coccidioides immitis*  
Conotoxins  
*Coxiella burnetii*  
Crimean-Congo hemorrhagic fever virus  
Diacetoxyscirpenol  
Eastern Equine Encephalitis virus  
Ebola virus  
*Francisella tularensis*  
Lassa fever virus  
Marburg virus  
Monkeypox virus  
Reconstructed replication competent forms of the 1918 pandemic influenza virus containing any portion of the coding regions of all eight gene segments (Reconstructed 1918 Influenza virus)  
Ricin  
*Rickettsia prowazekii*  
*Rickettsia rickettsii*  
Saxitoxin  
Shiga-like ribosome inactivating proteins  
Shigatoxin  
South American Hemorrhagic Fever viruses  
    Flexal  
    Guanarito  
    Junin  
    Machupo  
    Sabia  
Staphylococcal enterotoxins  
T-2 toxin  
Tetrodotoxin  
Tick-borne encephalitis complex (flavi) viruses  
    Central European Tick-borne encephalitis  
    Far Eastern Tick-borne encephalitis  
    Kyasanur Forest disease  
    Omsk Hemorrhagic Fever  
    Russian Spring and Summer encephalitis  
Variola major virus (Smallpox virus)  
Variola minor virus (Alastrim)  
*Yersinia pestis*

#### Overlap Select Agents and Toxins

*Bacillus anthracis*  
*Brucella abortus*  
*Brucella melitensis*  
*Brucella suis*  
*Burkholderia mallei* (formerly *Pseudomonas mallei*)  
*Burkholderia pseudomallei* (formerly *Pseudomonas pseudomallei*)  
Hendra virus  
Nipah virus  
Rift Valley fever virus  
Venezuelan Equine Encephalitis virus

#### USDA Select Agents and Toxins

African horse sickness virus  
African swine fever virus  
Akabane virus  
Avian influenza virus (highly pathogenic)  
Bluetongue virus (exotic)  
Bovine spongiform encephalopathy agent  
Camel pox virus  
Classical swine fever virus  
*Ehrlichia ruminantium* (Heartwater)  
Foot-and-mouth disease virus  
Goat pox virus  
Japanese encephalitis virus  
Lumpy skin disease virus  
Malignant catarrhal fever virus  
    (Alcelphine herpesvirus type 1)  
Menangle virus  
*Mycoplasma capricolum* subspecies *capripneumoniae*  
    (contagious caprine pleuropneumonia)  
*Mycoplasma mycoides* subspecies *mycoides* small colony (*MmmSC*) (contagious bovine pleuropneumonia)  
Peste des petits ruminants virus  
Rinderpest virus  
Sheep pox virus  
Swine vesicular disease virus  
Vesicular stomatitis virus (exotic): Indiana subtypes  
    VSV-IN2, VSV-IN3  
Virulent Newcastle disease virus

#### USDA Plant Protection and Quarantine (PPQ) Select Agents and Toxins

*Peronosclerospora philippinensis* (*Peronosclerospora sacchari*)  
*Phoma glycinicola* (formerly *Pyrenochaeta glycines*)  
*Ralsonia solanacearum* race 3, biovar 2  
*Rathayibacter toxicus*  
*Sclerophthora rayssiae* var *zeae*  
*Synchytrium endobioticum*  
*Xanthomonas oryzae*  
*Xylella fastidiosa* (citrus variegated chlorosis strain)

The above list was current as of the date of this document listed at the bottom of the page.  
The latest listing of select agents and toxins, restrictions, definitions and exemptions is available  
online at: <http://www.selectagents.gov/Select%20Agents%20and%20Toxins%20List.html>.

## Appendix B

### List of Military / Other Chemical Agents of Concern

Military / Other chemical agents of concern (excluding biological select agents) that can be used as a potential weapon of mass casualty / destruction or is potentially explosive or is toxic or highly flammable:

Type	Common Name	Technical Name	Formula	CAS Number
<b>Blister Agents</b>				
	Mustard Gas (H)	Bis (2-chlorethyl) sulfide	(CLCH <sub>2</sub> CH <sub>2</sub> ) <sub>2</sub> S	505602
	Mustard Gas (HO)	Bis (2-chlorethyl) sulfide	C <sub>4</sub> H <sub>8</sub> Cl <sub>2</sub> S	
	Phosgene Oxime (CX)	Dichloroformoxime	CHCl <sub>2</sub> NO	1794-86-1
	Lewisite (L)	Dichloro-(2-chlorovinyl)arsine	ClCHCHAsCl <sub>2</sub>	541253
<b>Asphyxiants</b>				
	Hydrogen Cyanide (AC)	Hydrogen Cyanide	HCN	74-90-8
	Cyanogen Chloride (CK)	Chlorocyan	CNCl	506-77-4
<b>Choking Agents</b>				
	Phosgene Gas (CG)	Carbonyl Chloride	COCl <sub>2</sub>	754445
	Chlorine Gas (Cl <sub>2</sub> )	Chlorine	Cl <sub>2</sub>	7782505
	Anhydrous Ammonia	Anhydrous Ammonia	NH <sub>3</sub>	7664417
<b>Nerve Agents</b>				
	Sarin (GB)	Isopropyl Methyphosphono-fluoridate	C <sub>4</sub> H <sub>10</sub> FO <sub>2</sub> P	107448
	Soman (GD)	Pinacolyl Methylphosphono-fluoridate	(CH <sub>3</sub> )(C <sub>6</sub> H <sub>13</sub> )POF	96-64-0
	Tabun (GA)	O-ethyl N-dimethylphosphor-amidocyanidate	C <sub>5</sub> H <sub>11</sub> N <sub>2</sub> O <sub>2</sub> P	77816
	VX	O-ethyl S-(2-diisopropylamino) Ethyl methylphosphonothiolate	C <sub>11</sub> H <sub>26</sub> NO <sub>2</sub> PS	50782-69-9
<b>Explosives/Reactives</b>				
	Picric Acid	2,4,6-trinitrophenol	(NO <sub>2</sub> ) <sub>3</sub> C <sub>6</sub> H <sub>2</sub> OH	88-89-1
	Perchloric Acid	hydronium perchlorate	HClO <sub>4</sub>	7601-90-3
	TNT	Trinitrotoluene	C <sub>6</sub> H <sub>2</sub> (NO <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	118-96-7

Explosives or explosive precursors not otherwise listed

#### Other Chemicals of Concern

Fluorine	Fluorine	F	7782-41-4
Hydrofluoric Acid	Hydrogen fluoride	HF	7664-39-3
Silane	Silane	SiH <sub>4</sub>	7803-62-5

Any pyrophoric chemical not otherwise listed

Any hazardous gases with a 3 or 4 in one of the hazard categories not otherwise listed (including mixtures)

Examples include: hydrogen sulfide and hydrogen.

## Appendix C

### List of Toxic/Extremely Hazardous Chemicals

The following list was developed using the Extremely Hazardous Substance list (Texas DSHS) Tier II Chemical Reporting Program with any chemical agent having a Threshold Planning Quantity of 10 lbs or less:

---

Common Name	Threshold Planning Quantity (lbs)	Reportable Quantity (lbs)	CAS Number
Azinphos-methyl	10/10,000	1	86500
Benzeneearsonic acid	10/10,000	10	98055
Bis(chloromethyl) ketone	10/10,000	10	534076
Carbofuran	10/10,000	10	1563662
Chromic chloride	1/10,000	1	10025737
Cobalt carbonyl	10/10,000	10	10310681
Colchicine	10/10,000	10	64868
Digoxin	10/10,000	10	20830755
Dimethyl-p-phenylenediamine	10/10,000	10	99989
Dinitrocresol	10/10,000	10	534521
Diphacinone	10/10,000	10	82666
Emetine, dihydrochloride	1/10,000	1	316427
Endosulfan	10/10,000	1	115297
Ethylene fluorohydrin	10	10	371620
Fenamiphos	10/10,000	10	22224926
Fluoroacetic acid	10/10,000	10	144490
Fluroacetyl chloride	10	10	359068
Hydrogen selenide	10	10	7783075
Lewisite	10	10	541253
Mechlorethamine	10	10	51752
Methyl vinyl ketone	10	10	78944
Monocrotophos	10/10,000	10	6923224
Nickel carbonyl	1	10	13463393
Nitric Oxide	10	100	10102439
Organorhodium Complex (PMN2147)	10/10,000	10	None
Paraquat dichloride	10/10,000	10	1910425
Paraquat methosulfate	10/10,000	10	2074502
Phorate	10	10	298022
Phosgene	10	10	75445
Phosmet	10/10,000	10	732116
Propargyl bromide	10	10	106967
Sarin	10	10	107448
Sodium fluoroacetate	10/10,000	10	62748
Tabun	10	10	77816

---

## Appendix D

### List of Controlled Substances

Schedule I – See 21 CFR Section 1308.11

Schedule II – See 21 CFR Section 1308.12

Schedule III – See 21 CFR Section 1308.13

Schedule IV – See 21 CFR Section 1308.14

Schedule V – See 21 CFR Section 1308.15

Title 21 of the Congressional Federal Register (CFR) may be accessed on-line at the following URL: <http://www.gpoaccess.gov/cfr/index.html>

**Listings of Schedule I-V Controlled Substances can also viewed at the Drug Enforcement Administration (DEA) website at the following URL:**  
<http://www.deadiversion.usdoj.gov/schedules/index.html>

Refer to the UTSA policy on Controlled Substances for information on obtaining licenses from the Texas Department of Public Safety and the DEA prior to ordering Controlled Substances.

## Appendix E

### Specifications for Class 3b and Class 4 lasers

AMERICAN NATIONAL STANDARD Z136.1 - 2000

The following laser definitions are excerpted with permission from the ANSI Z136.1 – 2000 American National Standard for Safe Use of Lasers.

duration within the maximum duration inherent in that specific use.

**3.3.2 Class 2 Visible Lasers and Laser Systems.** Class 2 lasers and laser systems are visible (0.4 to 0.7  $\mu\text{m}$ ) CW and repetitive-pulse lasers and laser systems which can emit accessible radiant energy exceeding the appropriate Class 1 AEL for the maximum duration inherent in the design or intended use of the laser or laser system, but not exceeding the Class 1 AEL for any applicable pulse (emission) duration  $< 0.25$  s and not exceeding an average radiant power of 1 mW.

#### 3.3.3 Class 3 Lasers and Laser systems.

**3.3.3.1 Class 3a lasers and laser systems** include lasers and laser systems which have an accessible output between 1 and 5 times the Class 1 AEL for wavelengths shorter than 0.4  $\mu\text{m}$  or longer than 0.7  $\mu\text{m}$ , or less than 5 times the Class 2 AEL for wavelengths between 0.4 and 0.7  $\mu\text{m}$ .

**3.3.3.2 Class 3b lasers and laser systems** include:

(1) Ultraviolet (0.18 to 0.4  $\mu\text{m}$ ) and infrared (1.4  $\mu\text{m}$  to 1 mm) lasers and laser systems which can emit accessible radiant power in excess of the Class 3a AEL during any emission duration within the maximum duration inherent in the design of the laser or laser system, but which (a) cannot emit an average radiant power in excess of 0.5 W for 0.25 s or (b) cannot produce a radiant energy greater than 0.125 J within an exposure time  $< 0.25$  s.

(1) Visible (0.4 to 0.7  $\mu\text{m}$ ) or near-infrared (0.7 to 1.4  $\mu\text{m}$ ) lasers or laser systems which emit in excess of the AEL of Class 3a but which (a) cannot emit an average radiant power in excess of 0.5 W for 0.25 s and (b) cannot produce a radiant energy greater than 0.03 J per pulse.

**3.3.4 Class 4 Lasers and Laser Systems.** Class 4 lasers and laser systems are those that emit radiation that exceed the Class 3b AEL.

#### 3.3.1 Class 1 Lasers and Laser Systems

**3.3.1.1** Any laser, or laser system containing a laser, that cannot emit accessible laser radiation levels in excess of the applicable Class 1 AEL for any emission duration within the maximum duration inherent in the design or intended use of the laser or laser system is a Class 1 laser or laser system during operation and is exempt from all control measures or other forms of surveillance with the exception of applicable requirements for embedded lasers (see Section 4.3.1.1). The maximum exposure duration is assumed to be no more than 30,000 s, except for infrared systems not intended to be viewed ( $> 0.7$   $\mu\text{m}$ ), 100 s shall be used. The exemption strictly applies to emitted laser radiation hazards and not to other potential hazards (see Section 7, Non-Beam Hazards).

**3.3.1.2** Lasers or laser systems intended for a specific use may be designated Class 1 by the LSO on the basis of that use for a limiting exposure duration of  $T_{\text{max}}$  less than 100 s, provided that the accessible laser radiation does not exceed the corresponding Class 1 AEL for any emission

From *ANSI Z136.1 (2000) American National Standard for Safe Use of Lasers*. Copyright 2000, Laser Institute of America. All rights reserved.



## Appendix F

### Chemicals/Items Prohibited by Fire Code

(Contact EHSRM prior to ordering or bringing on campus any chemicals/items listed below to discuss options for use and storage if these chemicals or items are necessary for research.)

- Consumer fireworks (1.4G)
- Class 4 oxidizers (examples)
  - Ammonium perchlorate (particle size > 15 microns)
  - Ammonium permanganate
  - Guanidine nitrate
  - Hydrogen peroxide solutions >91%
  - Tetranitromethane
- Unclassifiable/detonable organic peroxides
- Class I and II organic peroxides

Class I and II organic peroxides definitions and typical formulations:

“Class I” describes those formulations which are capable of deflagration, but not detonation. Fire hazard characteristics: Class I formulations present a deflagration hazard through easily initiated, rapid explosive decomposition. Class I includes some formulations that are relatively safe only under closely controlled temperatures. Either excessively high or low temperatures may increase the potential for severe explosive decomposition.

“Class II” describes those formulations that burn very rapidly and that present a severe reactivity hazard. Fire hazard characteristics: Class II formulations present an NFPA fire hazard similar to Class I flammable liquids such as acetone or toluene. The decomposition is not as rapid, violent, or complete as that produced by Class I formulations. As with Class I formulations, this class includes some formulations that are relatively safe when used under controlled temperatures or when diluted.

#### Typical Class I Formulations

<u>Organic Peroxide</u>	<u>Concentration</u>	<u>Diluent</u>
t-Butyl hydroperoxide	90	Water and t-BuOH
t-Butyl monoperoxy maleate	98	-----
t-Butyl peroxyacetate	75	Odorless mineral spirits
t-Butyl peroxyacetate	60	Odorless mineral spirits
t-Butyl isopropyl carbonate	92	Odorless mineral spirits
Dibenzoyl peroxide	98	-----
2,2-Di(t-butylperoxy) butane	50	Toluene
Diisopropyl peroxydicarbonate	99	-----
Di-n-propyl peroxydicarbonate	98	-----
Di-n-propyl peroxydicarbonate	85	Odorless mineral spirits

Typical Class II Formulations

Organic Peroxide	Concentration	Diluent
t-Amyl peroxybenzoate	96	-----
n-Butyl-4,4-di(t-butylperoxy) valerate	98	-----
t-Butyl hydroperoxide	70	DTBP and t-BuOH
t-Butyl peroxybenzoate	98	-----
t-Butyl peroxy-2-ethyl hexanoate	97	-----
t-Butyl peroxyisobutyrate	75	Odorless mineral spirits
t-Butylperoxy isopropyl carbonate	75	Odorless mineral spirits
t-Butyl peroxy-pivalate	75	Odorless mineral spirits
Diacetyl peroxide	25	DMP
Dibenzoyl peroxide	78	Water
1,1-Di(t-butylperoxy) cyclohexane	80	Odorless mineral spirits or BBP
Di-sec-butyl peroxydicarbonate	98	-----
Di-sec-butyl peroxydicarbonate	75	Odorless mineral spirits
1,1-Di(t-butylperoxy)-3,3,5-trimethyl cyclohexane	75-95	-----
Di(2-ethylhexyl) peroxydicarbonate	97	-----
2,5-Dimethyl-2,5-di(benzoylperoxy) hexane	95	-----
2,5-Dimethyl-2,5-dihydroperoxy hexane	70	Water
Peroxyacetic acid, Type E, stabilized	43	Water, Acetic acid, and H <sub>2</sub> O <sub>2</sub>

Abbreviations used above:

DTBP—Di-tertiary-butyl peroxide

DMP---Dimethyl phthalate

BBP---Butyl benzyl phthalate

## **Appendix G**

### **P-Listed Wastes**

P-listed Wastes are of concern for ordering purposes due to the potential for changing UTSA's waste generator status once the chemicals need to be disposed of as waste. The list of these chemicals can be found at the EPA's website at the following link:

<http://www.epa.gov/osw/hazard/wastetypes/listed.htm>.