



TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™

Laboratory Compliance Manual

November 2005

Table of Contents

I. Table of Contents

This section contains the table of contents for this Laboratory Compliance Manual.

II. Laboratory Training Documents

This section should contain any training certificates received by laboratory personnel that pertain to the laboratory environment.

III. Carcinogen Acknowledgement Forms

On the CD provided with the Laboratory Compliance Manual is a list of carcinogens compiled from International Agency for Research on Cancer (IARC); the National Toxicology Program (NTP); and the Occupational Safety & Health Administration (OSHA); supplied by Safety Services. For each carcinogen present in the laboratory, there should be an acknowledgement sheet in this section that everyone who works in the laboratory must sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the chemical.

IV. Mutagen Acknowledgment Forms

On the CD provided with the Laboratory Compliance Manual is a list of mutagens compiled from "Dangerous Properties of Industrial Materials" 10th ed., by N. Irving Sax and Richard J. Lewis; supplied by Safety Services. For each mutagen present in the laboratory, there should be an acknowledgement sheet in this section that everyone who works in the laboratory should sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the chemical.

V. Teratogen Acknowledgement Forms

On the CD provided with the Laboratory Compliance Manual is a list of teratogens compiled from "Dangerous Properties of Industrial Materials" 10th ed., by N. Irving Sax and Richard J. Lewis; supplied by Safety Services. For each teratogen present in the laboratory, there should be an acknowledgement sheet in this section that everyone who works in the laboratory should sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the chemical.

VI. CDC Select Agents and Acknowledgement Forms

This section should contain a list of select agents from the CDC that is compiled from CDC, HHS, and USDA. For each select agent present in the laboratory, there should be an acknowledgement sheet that everyone who works in the laboratory should sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the agent.

VII. IBC Registration List for Biologicals

This section should contain the IBC registration list for biologicals. For each IBC registered biological present in the laboratory, there should be an acknowledgement sheet that everyone who works in the laboratory should sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the agent.

VIII. IBC Registration List for Hazardous Materials

This section should contain the IBC registration list for hazardous materials. For each for each IBC registered hazardous material present in the laboratory, there should be an acknowledgement sheet that everyone who works in the laboratory should sign. In signing this sheet, the individual is acknowledging they have read the MSDS and are aware of the hazards presented by the agent.

IX. CHP

This section should contain a copy of TTUHSC Chemical Hygiene Plan (CHP) and acknowledgement sheet; supplied by Safety Services.

X. ECP

This section should contain a copy of TTUHSC Exposure Control Plan (ECP) and acknowledgement sheet; supplied by Safety Services.

XI. HCP

This section should contain a copy of TTUHSC Hazard Communication Plan (HCP) and acknowledgement sheet; supplied by Safety Services.

XII. PPEP

This section should contain a copy of TTUHSC Personal Protection Equipment Plan (PPEP) and acknowledgement sheet; supplied by Safety Services.

XIII. IBC Registration(s) and Updates

This section should contain Institutional Biohazards Committee (IBC) registrations and updates. The most recent one should be on the top of this section.

XIV. Individual Laboratory SOPs

This section should contain any standard operating procedures (SOPs) that pertain to this individual laboratory regarding safety, handling and disposal of the chemicals contained in this manual.

XV. Shipping and Receiving of Select Agents

This section should contain all documentation pertaining to this laboratories shipping and receiving of select agents. On August 31st of each fiscal year, this section should be emptied and placed in an archive binder specifically for select agent shipping and receiving documentation. If your laboratory does not have select agents, then this section should be empty.

XVI. Incident Procedures and Emergency Response

This section should contain procedures not found in the CHP and the Individual Laboratory SOPs sections. There should also be contact phone numbers for laboratory personnel in this section.

XVII. Laboratory Inventory

This section should contain a copy of the laboratory inventory and be updated annually.

This form is to acknowledge that the below signed have read the MSDS and understand the hazards associated with the use of: _____

Name: _____ Signature: _____
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BIOHAZARDOUS AGENTS REQUIRING IBC PROTOCOL REGISTRATION

INSTRUCTIONS: When registering hazardous biological or chemical agents, the IBC Protocol Registration Application form (http://www.ttuhschool.edu/Admin/safety/lab/e_regform_7-04.doc) must be completed first. For any biological agent found on this list, **Addendum A** of the IBC Registration must **also** be completed and submitted for review. Please see the following link for **Addendum A** (http://www.ttuhschool.edu/Admin/safety/lab/e_regform_7-04_A.doc).

DEFINITION: The IBC defines “biohazardous materials” as all infectious organisms (bacteria, fungi, parasites, prions, rickettsiae, viruses) that can cause disease in humans or cause significant environmental or agricultural impact, in addition to all human or non-human primate tissues, fluids, and primary cell lines, all transgenic animals and plants, recombinant DNA, and all natural or genetically-engineered human and animal cell lines that are pathogenic to humans.

CDC/NIH/USDA “select agents” are highlighted in **green** for quick reference. The federal government decides which agents are at high risk of being used in terrorist activities and refers to them as “select agents”. Select agents can either be pathogens (listed below) or biological toxins. Even though biological toxins are derived from animals and plants, they are included in the highly hazardous chemical list because they have no pathogenic potential.

NOTE: The following list should be used as a reference and does not necessarily reflect ALL BSL-2 and higher agents or materials that require IBC protocol approval.

NOTE: BSL-1 and non-hazardous biological agents will be exempt from IBC protocol registration, as described above. However, a complete inventory list of biologicals must be submitted to the IBC before any use of these materials will be approved. There are no forms to fill out. The Excel file should be named as follows and submitted with the rest of the application:
LastName_FirstName_Biologicals_Year

Hard copies of this inventory may be kept in the lab for documentation and use, but should **not** be submitted as part of this registration. Please sort entries alphabetically before submitting electronically.

NOTE: If you are registering for the first time, you should submit a *proposed* biological inventory for the year.

These materials require an approved IBC protocol for possession or use*

HUMAN and non-HUMAN PRIMATE MATERIALS

- Primary cell lines **
- Blood or blood products
- Fluids surrounding internal organs, the joints, or a fetus and semen or vaginal secretions
- Any body fluids contaminated with visible blood
- Any tissues (unfixed)

* Before possession or use of these materials, investigators must have an IBC-approved protocol and either an approved Institutional Review Board (IRB) protocol or an approved IRB exemption. Contact Sponsored Programs for further information.

** BSL-1 materials are exempt. Contact Laboratory Safety Services (743-2597) for other possible exemptions.

BIOSAFETY LEVEL II AGENTS

BSL II agents are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are *often* available.

Bacterial Agents

- Acinetobacter baumannii* (formerly *Acinetobacter calcoaceticus*)
- Actinobacillus*
- Actinomyces pyogenes* (formerly *Corynebacterium pyogenes*)
- Aeromonas hydrophila*
- Amycolata autotrophica*
- Archanobacterium haemolyticum* (formerly *Corynebacterium haemolyticum*)
- Arizona hinshawii* - all serotypes
- Bacillus anthracis***
- Bartonella henselae*, *B. quintana*, *B. vinsonii*
- Bordetella* including *B. pertussis*
- Borrelia recurrentis*, *B. burgdorferi*
- Burkholderia* (formerly *Pseudomonas* species) except those listed in BSL III)
- Campylobacter coli*, *C. fetus*, *C. jejuni*
- Chlamydia psittaci*, *C. trachomatis*, *C. pneumoniae*
- Clostridium botulinum*** (neurotoxin producing species), ***Clostridium botulinum neurotoxins***, *Cl. chauvoei*, *Cl. haemolyticum*, *Cl. histolyticum*, *Cl. novyi*, *Cl. septicum*, *Cl. Tetani*, ***Cl. Perfringens epsilon toxin***
- Corynebacterium diphtheriae*, *C. pseudotuberculosis*, *C. renale*
- Dermatophilus congolensis*
- Edwardsiella tarda*
- Erysipelothrix rhusiopathiae*
- Escherichia coli* - all enteropathogenic, enterotoxigenic, enteroinvasive and strains bearing K1 antigen, including *E. coli* O157:H7
- Haemophilus ducreyi*, *H. influenzae*
- Helicobacter pylori*
- Klebsiella* - all species except *K. oxytoca* (RG1)
- Legionella* including *L. pneumophila*
- Leptospira interrogans* - all serotypes
- Listeria*
- Moraxella*
- Mycobacterium* (except those listed in BSL III) including *M. avium* complex, *M. asiaticum*, *M. bovis* BCG vaccine strain, *M. chelonae*, *M. fortuitum*, *M. kansasii*, *M. leprae*, *M. malmoense*, *M. marinum*, *M. paratuberculosis*, *M. scrofulaceum*, *M. simiae*, *M. szulgai*, *M. ulcerans*, *M. xenopi*
- Mycoplasma*, except *M. mycoides* and *M. agalactiae* which are restricted animal pathogens
- Neisseria gonorrhoeae*, *N. meningitidis*
- Nocardia asteroides*, *N. brasiliensis*, *N. otitidiscaviarum*, *N. transvalensis*
- Rhodococcus equi*
- Salmonella* including *S. arizonae*, *S. cholerasuis*, *S. enteritidis*, *S. gallinarum-pullorum*, *S. meleagridis*, *S. paratyphi*, A, B, C, *S. typhi*, *S. typhimurium*

- Shigella* including *S. boydii*, *S. dysenteriae*, type 1, *S. flexneri*, *S. sonnei*
- Shiga-like ribosome inactivating proteins
- Sphaerophorus necrophorus*
- Staphylococcal enterotoxins
- Staphylococcus aureus*
- Streptobacillus moniliformis*
- Streptococcus* including *S. pneumoniae*, *S. pyogenes*
- Treponema pallidum*, *T. carateum*
- Vibrio cholerae*, *V. parahemolyticus*, *V. vulnificus*
- Yersinia enterocolitica*

Fungal Agents

- Blastomyces dermatitidis*
- Cladosporium bantianum*, *C. (Xylohypha) trichoides*
- Cryptococcus neoformans*
- Dactylaria galopava (Ochroconis gallopavum)*
- Epidermophyton*
- Exophiala (Wangiella) dermatitidis*
- Fonsecaea pedrosoi*
- Microsporium*
- Paracoccidioides braziliensis*
- Penicillium marneffeii*
- Sporothrix schenckii*
- Trichophyton*

Parasitic Agents

- Ancylostoma* human hookworms including *A. duodenale*, *A. ceylanicum*
- Ascaris* including *Ascaris lumbricoides suum*
- Babesia* including *B. divergens*, *B. microti*
- Brugia* filaria worms including *B. malayi*, *B. timori*
- Coccidia*
- Cryptosporidium* including *C. parvum*
- Cysticercus cellulosae* (hydatid cyst, larva of *T. solium*)
- Echinococcus* including *E. granulosus*, *E. multilocularis*, *E. vogeli*
- Entamoeba histolytica*
- Enterobius*
- Fasciola* including *F. gigantica*, *F. hepatica*
- Giardia* including *G. lamblia*
- Heterophyes*
- Hymenolepis* including *H. diminuta*, *H. nana*
- Isospora*
- Leishmania* including *L. braziliensis*, *L. donovani*, *L. ethiopia*, *L. major*, *L. mexicana*, *L. peruviana*, *L. tropica*
- Loa loa* filaria worms
- Microsporidium*
- Naegleria fowleri*

- Necator* human hookworms including *N. americanus*
- Onchocerca* filaria worms including, *O. volvulus*
- Plasmodium* including simian species, *P. cynomologi*, *P. falciparum*, *P. malariae*, *P. ovale*, *P. vivax*
- Sarcocystis* including *S. sui hominis*
- Schistosoma* including *S. haematobium*, *S. intercalatum*, *S. japonicum*, *S. mansoni*, *S. mekongi*
- Strongyloides* including *S. stercoralis*
- Taenia solium*
- Toxocara* including *T. canis*
- Toxoplasma* including *T. gondii*
- Trichinella spiralis*
- Trypanosoma* including *T. brucei brucei*, *T. brucei gambiense*, *T. brucei rhodesiense*, *T. cruzi*
- Wuchereria bancrofti* filaria worms

Viruses

Adenoviruses, human - all types

Alphaviruses (Togaviruses) - Group A Arboviruses

--Eastern equine encephalitis virus

--Eastern equine encephalomyelitis virus

--Venezuelan equine encephalomyelitis vaccine strain TC-83

--Western equine encephalomyelitis virus

Arenaviruses

--Lymphocytic choriomeningitis virus (non- neurotropic strains)

--Tacaribe virus complex

-- Bunyaviruses

--Bunyamwera virus

--Rift Valley fever virus vaccine strain MP-12

-- Calciviruses

Coronaviruses

Flaviviruses (Togaviruses) - Group B Arboviruses

--Dengue virus serotypes 1, 2, 3, and 4

--Yellow fever virus vaccine strain 17D

-- Hepatitis A, B, C, D, and E viruses

Herpesviruses - except Herpesvirus simiae (Monkey B virus see BSL IV - *Viral Agents*)

--Cytomegalovirus

--Epstein Barr virus

--*Herpes simplex* types 1 and 2

--*Herpes zoster*

--Human herpesvirus types 6 and 7

Orthomyxoviruses

--Influenza viruses types A, B, and C

-- Papovaviruses

--All human papilloma viruses

Paramyxoviruses

--Newcastle disease virus

- Measles virus
- Mumps virus
- Parainfluenza viruses types 1, 2, 3, and 4
- Respiratory syncytial virus
- Parvoviruses
 - Human parvovirus (B19)
- Picornaviruses
 - Coxsackie viruses types A and B
 - Echoviruses - all types
 - Polioviruses - all types, wild and attenuated
 - Rhinoviruses - all types
- Poxviruses - all types except Monkeypox virus (see BSL III - *Viruses and Prions*) and restricted poxviruses including **Alastrim (Variola minor virus)**, **Smallpox (Variola major virus)**, and Whitepox Reoviruses - all types including Coltivirus, human Rotavirus, and Orbivirus (Colorado tick fever virus)
- Rhabdoviruses
 - Rabies virus - all strains
 - Vesicular stomatitis virus - laboratory adapted strains including VSV-Indiana, San Juan, and Glasgow
- Togaviruses (see Alphaviruses and Flaviviruses)
 - Rubivirus (rubella)

BIOSAFETY LEVEL III AGENTS

BSL III agents are associated with serious or lethal human disease for which preventive or therapeutic interventions *may be* available.

Bacterial Agents

- Bartonella*
- Brucella* including ***B. abortus***, *B. canis*, ***B. suis***, ***B. melitensis***
- Burkholderia (Pseudomonas) mallei***, ***B. pseudomallei***
- Coxiella burnetii***
- Francisella tularensis***
- Mycobacterium bovis* (except BCG strain, BSL II - *Bacterial Agents Including Chlamydia*), *M. tuberculosis*
- Pasteurella multocida* type B -"buffalo" and other virulent strains
- Rickettsia akari*, *R. australis*, *R. canada*, *R. conorii*, ***R. prowazekii***, ***R. rickettsii***, *R. siberica*, *R. tsutsugamushi*, *R. typhi* (*R. mooseri*)
- Yersinia pestis***

Fungal Agents

- Coccidioides immitis*** (sporulating cultures; contaminated soil)
- Coccidioides posadasii***
- Histoplasma capsulatum*, *H. capsulatum* var.. *duboisii*

Parasitic Agents

None

Viruses and Prions

Alphaviruses (Togaviruses) - Group A Arboviruses

--Semliki Forest virus

--St. Louis encephalitis virus

--Venezuelan equine encephalitis virus

--Venezuelan equine encephalomyelitis virus (except the vaccine strain TC-83)

Arenaviruses (aka South American Haemorrhagic Fever virus; also see BSL IV)

--Flexal

--Lymphocytic choriomeningitis virus (LCM) (neurotropic strains)

Bunyaviruses

--Hantaviruses including Hantaan virus

--Rift Valley fever virus

Flaviviruses (Togaviruses) - Group B Arboviruses

--Japanese encephalitis virus

--Yellow fever virus

--Poxviruses

--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)

Prions

--Transmissible spongiform encephalopathies (TME) agents (Creutzfeldt-Jacob disease and kuru agents, (BSE) Bovine spongiform encephalopathy agent)

Retroviruses

--Human immunodeficiency virus (HIV) types 1 and 2

--Human T cell lymphotropic virus (HTLV) types 1 and 2

--Simian immunodeficiency virus (SIV)

Rhabdoviruses

--Vesicular stomatitis virus

BIOSAFETY LEVEL IV AGENTS

BSL IV agents are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are *not usually* available.

Bacterial Agents

None

Fungal Agents

None

Parasitic Agents

None

Viral Agents

Arenaviruses (aka South American Haemorrhagic Fever viruses; also see BSL III)

- Flexal
- Guanarito virus
- Lassa fever virus
- Junin virus
- Machupo virus
- Sabia

Bunyaviruses (Nairovirus)

- Crimean-Congo hemorrhagic fever virus

Filoviruses

- Ebola viruses
- Marburg virus

Flaviruses (Togaviruses) - Group B Arboviruses

- Tick-borne encephalitis virus complex (flavi) including Central European tick-borne encephalitis, Far Eastern tick-borne encephalitis, Hanzalova, Hypr, Kumlinge, Kyasanur Forest disease, Omsk hemorrhagic fever, and Russian Spring Summer encephalitis viruses

Herpesviruses (alpha)

- Herpesvirus simiae (Herpes B or Monkey B virus)
 - Cercopithecine herpesvirus 1 (Herpes B virus)

Paramyxoviruses

- Equine morbillivirus (Hendra and Hendra-like viruses)
- Nipah virus

Poxviruses

- Variola major virus (Smallpox virus)
- Variola minor virus (Alastrim)

Hemorrhagic fever agents and viruses as yet undefined

USDA HIGH CONSEQUENCE LIVESTOCK PATHOGENS AND TOXINS (Non-overlap agents and toxins)

Fungal Agents

- Mycoplasma capricolum* / M.F38/*M. mycoides capri* (contagious caprine pleuropneumonia)
- Mycoplasma mycoides mycoides* (contagious bovine pleuropneumonia)

Viral agents BSL3 and BSL4(Arenaviruses, Arboviruses, Flaviviruses)

- African swine fever virus
- African horse sickness virus
- Akabane virus
- Avian influenza virus (highly pathogenic)
- Blue tongue virus (exotic)
- Bovine spongiform encephalopathy agent
- Camel pox virus
- Classical swine fever virus

- Cowdria ruminantium* (heartwater)
- Foot and mouth disease virus
- Goat pox virus
- Japanese encephalitis virus
- Lumpy skin disease virus
- Malignant catarrhal fever virus
- Menangle virus
- Newcastle disease virus (VVND)
- Peste Des Petits Ruminants virus
- Rinderpest virus
- Sheep pox virus
- Swine vesicular disease virus
- Vesicular stomatitis virus (exotic)

Listed Plant Pathogens

- Liberobacter africanus*
- Liberobacter asiaticus*
- Peronosclerospora philippinensis*
- Phakopsora pachyrhizi*
- Plum Pox Potyvirus
- Ralstonia solanacearum* race 3, biovar 2
- Sclerophthora rayssiae* var *zeae*
- Synchytrium endobioticum*
- Xanthomonas oryzae*
- Xylella fastidiosa* (citrus variegated chlorosis strain)

HAZARDOUS TOXICANTS AND TOXINS REQUIRING IBC PROTOCOL REGISTRATION

INSTRUCTIONS: When registering a hazardous biological or chemical agent, the IBC Protocol Registration Application form (http://www.ttuhs.edu/Admin/safety/lab/e_regform_7-04.doc) must be completed first. For any chemical toxicant or biotoxin found on this list, **Addendum B** of the IBC Registration must also be completed and submitted for review. Please see the following link for **Addendum B** (http://www.ttuhs.edu/Admin/safety/lab/e_regform_7-04_B.doc).

DEFINITION: The hazardous toxicants and toxins which require an approved IBC protocol are now defined as any chemical or toxin which is a: highly toxic, hazardous chemical = LD50 (oral/rat) of ≤ 50 mg/kg. Some of these chemical agents are listed in the chart below. Note that this is not an all-inclusive list.

NOTE: Investigational quantities of most standard lab chemicals will now be exempt from IBC protocol registration, as described above. However, a complete inventory list of lab chemicals must be submitted to the IBC before any chemical use will be approved. There are no forms to fill out. The inventory can be submitted online through EH&S at <http://www.ttuhs.edu/admin/safety/chemlist> (contact Laboratory Safety in Lubbock for details) or in an Excel file. Entries in the Excel file should be sorted alphabetically and include quantities and CAS numbers if available. The file should be named as follows and submitted electronically with the rest of the application:

LastName_FirstName_Chemicals_Year

Hard copies of this inventory may be kept in the lab for documentation and use, but should not be submitted as part of this registration.

NOTE: If you are registering for the first time, you should submit a *proposed* chemical inventory for the year.

IBC PROTOCOL REGISTRATION REQUIRED:	CAS Number	Hazard Classification	Specific Hazard Type
2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD-dioxin) (0.05 mg/kg LD50)	1746-01-6	IARC1, NTP	carcinogen
3-acetylpyridine (46 uL/kg LD50)	350-03-8	"3"HEALTH	toxic
4-aminopyridine (21 mg/kg LD50)	504-24-5	"4"HEALTH	toxicant
abrin	1393-62-0	SELECT AGENT, "4"HEALTH	toxin
acrolein (44 mg/kg LD50)	107-02-8	"4" HEALTH	toxicant
aconitine (1mg/kg LD50)	302-27-2	"4"HEALTH	toxicant
actinomycin D (7.2 mg/kg LD50)	50-76-0	"4"HEALTH	carcinogen
alpha-bungarotoxin (150 ug/kg LD50 Intraperitoneal)	11032-79-4	Not Published	toxic
aminopterin (3 mg/kg LD50)	54-62-6	"4"HEALTH	toxicant

antimycin A (28 mg/kg LD50)	1397-94-0	"3"HEALTH	toxic
arterenol free base (20 mg/kg LD50)	51-41-2	"4"HEALTH	toxicant
BCNU (20 mg/kg LD50)	153-93-8	"4"HEALTH	toxicant
butyl methyl ether (TBME) (4 mg/kg LD50)	1634-04-04	"4"HEALTH	toxicant
carbamylocholine chloride (carbachol) (40 mg/kg LD50)	51-83-2	"3"HEALTH	toxic
carbon fuchsin (36 mg/kg LD50)	4197-24-4	"4"HEALTH	toxicant
Clostridium botulinum neurotoxin A	93384-43-1	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin B	93384-44-2	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin C	93384-45-3	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin D	93384-46-4	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin E	93384-47-5	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin F	107231-15-2	SELECT AGENT, "4"HEALTH	toxin
Clostridium botulinum neurotoxin G	107231-16-3	SELECT AGENT, "4"HEALTH	toxin
Clostridium perfringens epsilon toxin	no CAS	SELECT AGENT, "4"HEALTH	toxin
cyanogen bromide (25-50 mg/kg I)	506-68-3	"4"HEALTH	poison, toxic
cycloheximide (2 mg/kg LD50)	66-81-9	"4"HEALTH	toxicant
cyclopiazonic acid (36 mg/kg LD50)	18172-33-3	"4"HEALTH	toxicant
cytochalasin B (11 mg/kg LD50)	14930-96-2	"4"HEALTH	toxicant
diacetoxyscirpenol (7mg/kg LD50)	2770-40-8	SELECT AGENT, "4"HEALTH	toxin
diisopropyl fluorophosphate (5mg/kg LD50)	55-91-4	"4"HEALTH	toxicant
heptachlor (40mg/kg LD50)	76-44-8	"4"HEALTH, IARC2B	carcinogen
hydrogen cyanide (10 mg/kg LD50)	74-90-8	"4"HEALTH, "4"FLAMMABILITY, CDC CHEM AGENT	toxicant, toxic gas, fire hazard
mercuric acetate (40.9 mg/kg LD50)	1600-27-7	"4"HEALTH	poison
mercuric chloride (1mg/kg LD50)	7487-94-7	"4"HEALTH	carcinogen
mitomycin C (23 mg/kg LD50)	50-07-7	"4"HEALTH	toxin
muscimol (45 mg/kg LD50)	2763-96-4	"3"HEALTH	toxicant
nicotine (50 mg/kg LD50)	54-11-5	"3"HEALTH, EPA	toxicant
nitric oxide (200ppm/1mm LCLO)	10102-43-9	"4"HEALTH, OXY	explosion hazard
N-nitrosomethylvinylamine (24 mg/kg LD50)	4549-40-0	IARC2B, NTP,"4"HEALTH	carcinogen
omega conotoxin GI	76862-65-2	SELECT AGENT	toxin
omega conotoxin GIV	81133-24-6	SELECT AGENT	toxin
omega conotoxin GIVA	106375-28-4	SELECT AGENT	toxin
omega conotoxin GIIIA	129129-65-3	SELECT AGENT	toxin
omega conotoxin MI	83481-45-2	SELECT AGENT	toxin

omega conotoxin MVIIA	107452-89-1	SELECT AGENT	toxin
omega conotoxin MVIIB	no CAS	SELECT AGENT	toxin
omega conotoxin MVIIC	147794-23-8	SELECT AGENT	toxin
omega conotoxin SIA	no CAS	SELECT AGENT	toxin
omega conotoxin SVIB	no CAS	SELECT AGENT	toxin
osmium tetroxide (14 mg/kg LD50)	20816-12-0	"4"HEALTH	carcinogen
pentachlorophenol (PCP) (27mg/kg)	87-86-5	IARC2B, "4"HEALTH "3"HEALTH, "4" CONTACT, "3"	toxicant, poison
periodic acid (LD50 not listed)	10450-60-9	REACTIVITY	poison
phenyl mercuric acetate (PMA) (22 mg/kg LD50)	62-38-4	"4"HEALTH	toxicant
phosphorus (red) (3 mg/kg LD50)	7723-14-0	"4"HEALTH, CDC CHEM AGENT	toxicant
phosphorus (white) (3 mg/kg LD50)	7723-14-0	"4"HEALTH, CDC CHEM AGENT	toxicant
picrotoxin (15 mg/kg LD50)	124-87-8	"4"HEALTH	toxin
potassium cyanide (5 mg/kg LD50)	151-50-8	"4"HEALTH, CDC CHEM AGENT	toxicant
potassium dichromate (25 mg/kg LD50)	7778-50-9	"4"HEALTH	poison, carcinogen
ricin toxin subunit A	96638-28-7	SELECT AGENT, "4"HEALTH	toxin
ricin toxin subunit B	96638-29-8	SELECT AGENT, "4"HEALTH	toxin
saxitoxin/STX (0.26 mg/kg LD50)	35554-08-6	SELECT AGENT, "4"HEALTH	toxin
Shiga and Shiga-like toxins (1 and 2)	no CAS	SELECT AGENT, "4"HEALTH	toxin
silver nitrate (50 mg/kg LD50)	7761-88-8	"4"HEALTH	toxicant
sodium arsenite anhydrous (41 mg/kg LD50)	7784-46-5	"4"HEALTH	poison, carcinogen
sodium azide (27 mg/kg LD50)	26628-22-8	"4"HEALTH	toxicant
sodium cyanide (6.64 mg/kg LD50)	143-33-9	"4"HEALTH, CDC CHEM AGENT	toxicant
strychnine (23.5 mg/kg LD50)	57-24-9	"4"HEALTH, CDC CHEM AGENT	toxicant
T-2 toxin (2.7 mg/kg LD50)	21259-20-1	SELECT AGENT, "4"HEALTH	toxin
tetramethylammonium chloride (50 mg/kg LD50)	75-57-0	"4"HEALTH	poison
tetrodotoxin (10 mg/kg LD50)	4368-28-9	SELECT AGENT, "4"HEALTH	toxin
vitamin d2 (calciferol) (10 mg/kg LD50)	50-14-6	"3"HEALTH	toxic
vitamin d3 (cholecalciferol) (42 mg/kg LD50)	67-97-0	"3"HEALTH	toxic
wortmannin (18 mg/kg LD50)	19545-26-7	"4"HEALTH	toxicant

KEY:

All Yellow and several of the Green highlighted agents meet the criterion of ≤ 50 mg/kg LD50 (rat, oral)

- All SELECT AGENTS are highlighted in Green.
- LD50 values are indicated if current tox data is available

- “Number Ratings 1-4” of HEALTH, FLAMMABILITY, REACTIVITY, or OXY (Specific Hazard measurements of hazard severity (“4” is most severe) established by the NFPA (National Fire Protection Association) rating symbols.
IARC1 (UN International Agency for Research on Cancer) = sufficient evidence of carcinogenicity in humans
IARC2B= limited evidence of carcinogenicity in humans
NTP (National Toxicology Program) = is known to be or assumed to be a human carcinogen
SELECT AGENT = select agents as designated by the CDC/NIH and/or USDA.
CDC CHEM AGENT = agents designated by the CDC as potential chemical warfare agents.
EPA = on the EPA’s extremely hazardous substances list.

Link to:

Chemical Hygiene Plan (Word document)

<http://www.ttuhschool.edu/Admin/safety/lab/ChemPlanformfinal051017EF.doc>

Link to:

Exposure Control Plan (Word document)

<http://www.ttuhschool.edu/Admin/safety/lab/ExposurePlanformfinal051017EF.doc>

Link to:

Hazard Communication Plan (Word document)

<http://www.ttuhscl.edu/Admin/safety/lab/HazComPlanformfinal051017EF.doc>