TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™

# Laboratory Compliance Manual

# July 2008

# TTUHSC Laboratory Compliance Manual
# Table of Contents

## X. HCP

This section contains a copy of the TTUHSC Hazard Communication Plan (HCP), and an acknowledgement sheet signed by all laboratory employees. You may print additional copies of the acknowledgment sheets from the Safety Services website, or call Safety Services for assistance.

## XI. PPEP

This section contains a copy of TTUHSC Personal Protection Equipment Plan (PPEP) and an acknowledgement sheet signed by all laboratory employees. You may print additional copies of the acknowledgment sheets from the Safety Services website, or call Safety Services for assistance.

## XII. Individual Laboratory SOPs

This section should contain any standard operating procedures (SOPs) that pertain to this individual laboratory regarding safety, handling, and disposal of hazardous materials.

## XIII. Laboratory Training Documents

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

## XIV. Shipping and Receiving of Hazardous Materials

This section contains a “Shipping Hazardous Materials” memo from Safety Services, and should contain all documentation pertaining to this laboratories shipping and receiving of hazardous materials.

## XV. Select Agents

This section should contain all documentation pertaining to this laboratories procurement, storage, usage, and disposal of select agents; including documentation of compliance with TTUHSC OP 73.12. If your laboratory does not have Select Agents 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.

TEXAS TECH UNIVERSITY
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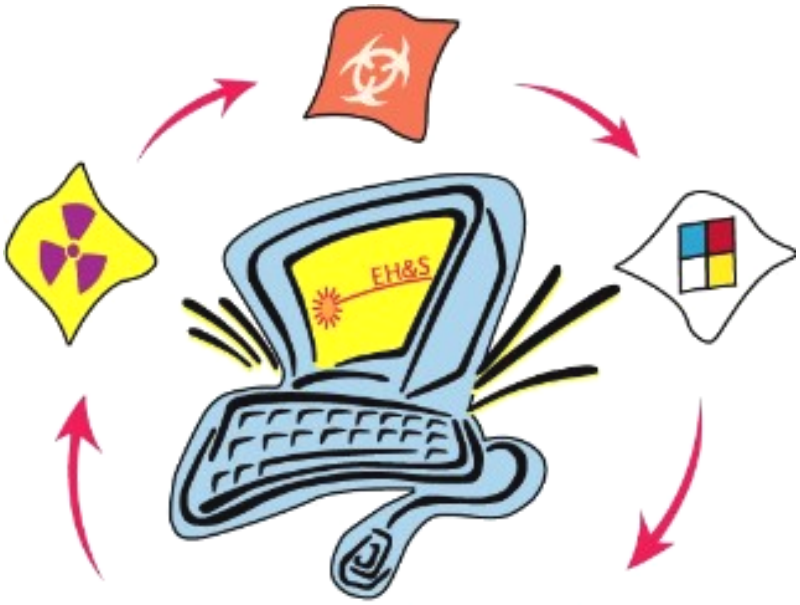
# Chemical Inventory User's Guide




## Safety Services

http://www.ttuhsc.edu/admin/safety/

| Abilene | Amarillo | El Paso | Lubbock | Permian Basin |
|---|---|---|---|---|
| 432-335-1820 | 806-345-5788 | 915-783-5244 | 806-743-2597 | 432-335-1820 |

# User's Guide to Environmental Health & Safety Assistant (EHSA)

## Table of Contents

**(Hold Control + Click to jump to page)**

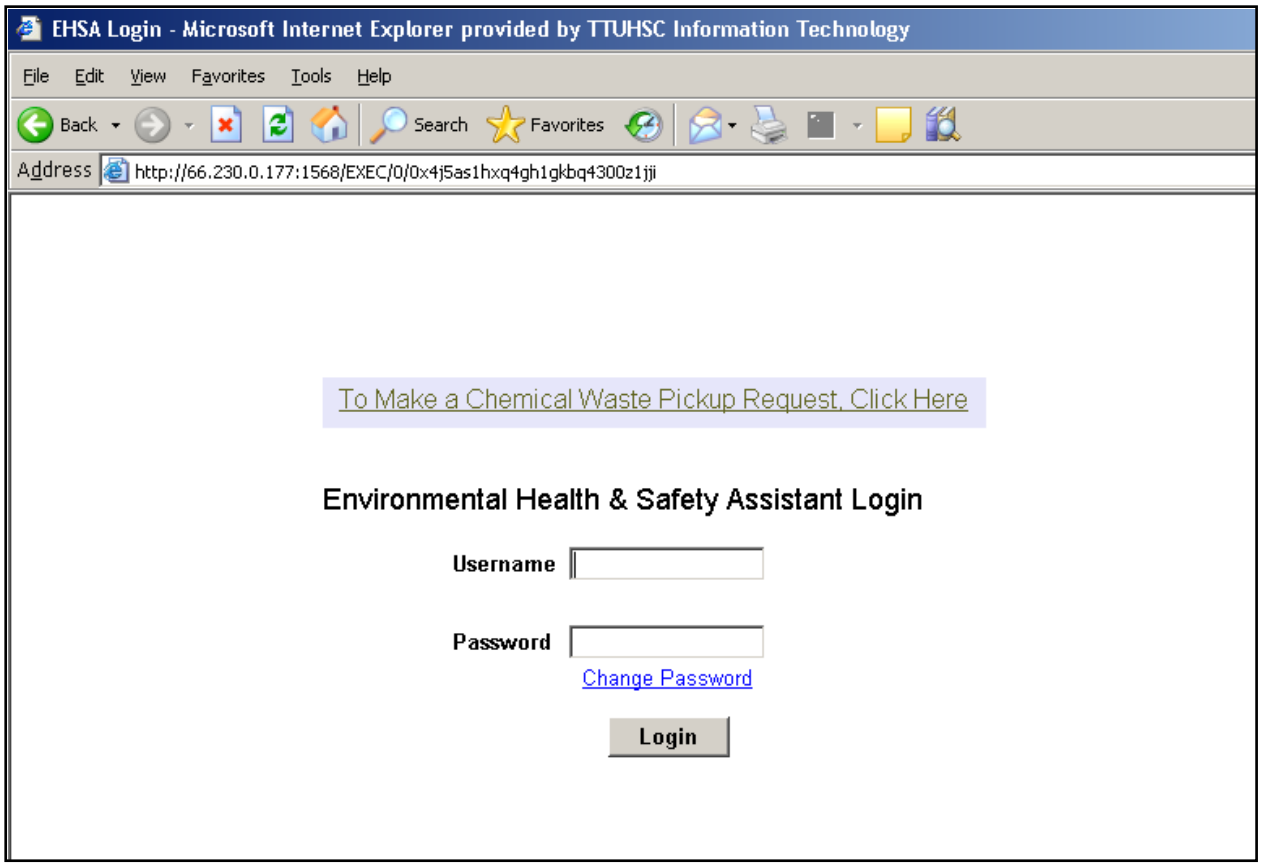
## LOG IN TO EHSA:

**Go to:** http://www.ttuhsc.edu/admin/safety/chemlist

You may log into the system using your eRaider credentials.

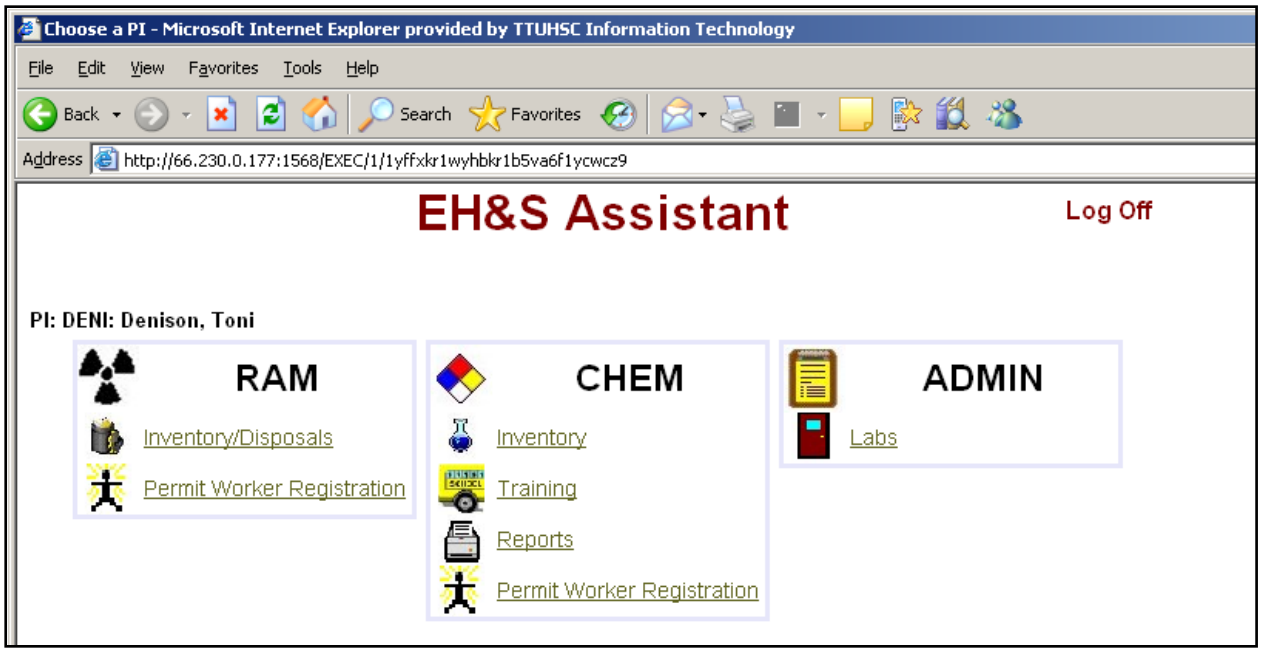
**For assistance with your Username and/or Password contact Laboratory Safety in Lubbock at 806-743-2597.

**Upon request by the PI, lab managers or other personnel can be given access.



## MAIN MENU:

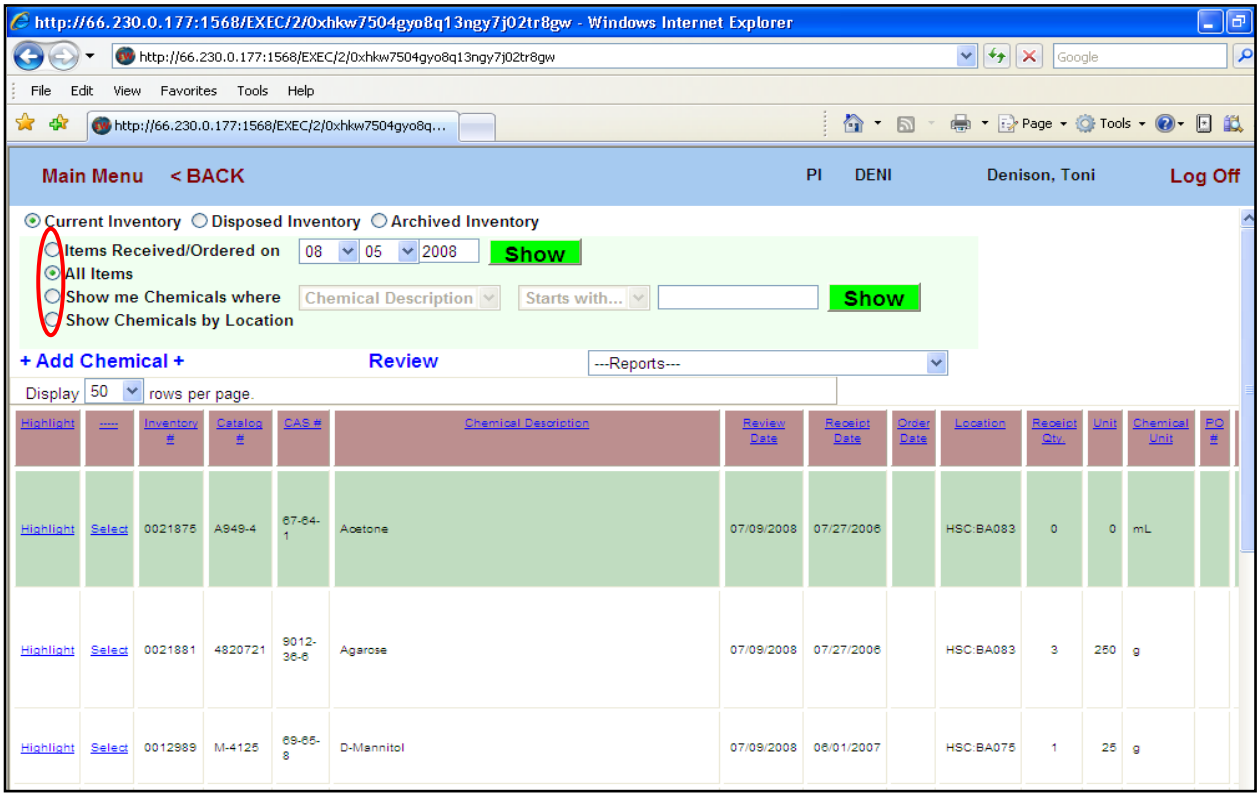
Once logged in you will be directed to the “Main Menu” page and should see the screen below. Anytime you wish to return to the Main Menu from any of the links on this page, click **Main Menu** or **<BACK** in the upper left hand corner.



## INVENTORY:

Click on **Inventory** from the Main Menu. It should take you to a similar screen with ***your*** inventory information. There will be a slight delay as your inventory information is being uploaded.

Here, you can Add, Dispose, or Review the items from your chemical inventory.




The default view is set to show "**All Items**" but you can narrow the display range by choosing one of the search options, circled in red above:

- Items Received/Ordered On
- Show me Chemicals Where
- Show Chemicals by Location

To perform a search, click on the radio button next to the search method you want to use, and enter the search criteria in the drop down boxes, then click the **Show** button.

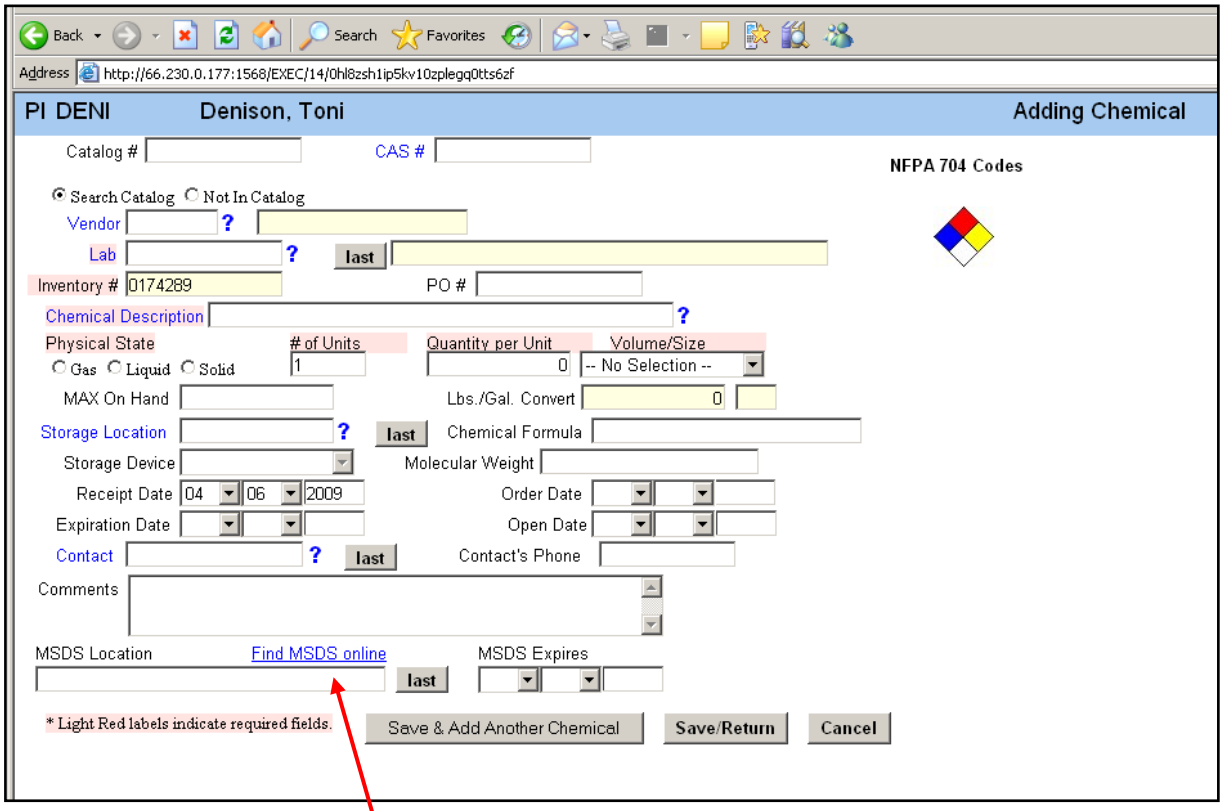
Click on **Select** next to an inventory item to view the details about that item. When you are finished, you must either click **Save** or **Cancel** at the bottom of the screen to return to your inventory list. Using your **Back** button on the browser will NOT work.

## ADDING AN ITEM:

To add an item to your inventory click **+ Add Chemical +** on the inventory view screen and the following screen will appear. Complete the information on this page for the item you wish to add.

Once all necessary information has been entered, click **Save** and you will be redirected to the main Inventory page.

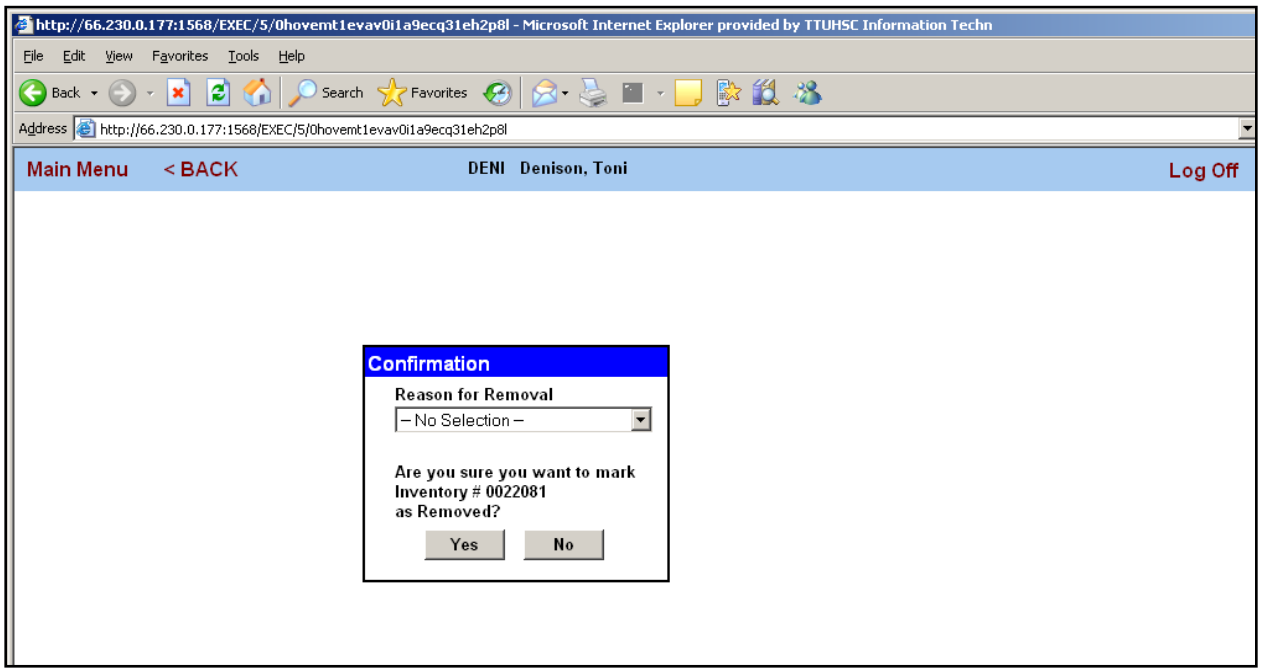
**Please note that items with pink labels are **REQUIRED** fields.**




Note that by clicking on Find MSDS online you will be redirected to a Google search for that MSDS. You will have to allow pop-ups for this function to work.

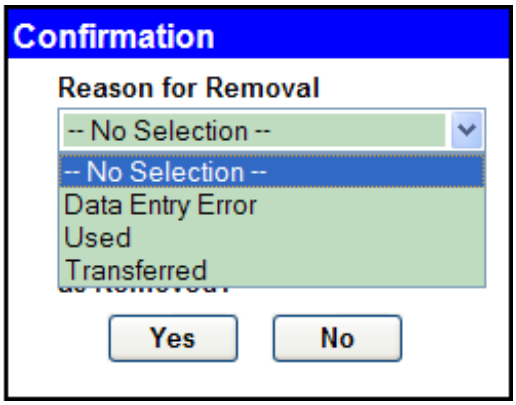
## REMOVING AN ITEM:

To remove an item that is listed on your inventory click on **Remove** on the main inventory page, to the left of the item you wish to remove. A screen similar to the one below should appear.




At this point you will need to declare your reason for the removal.

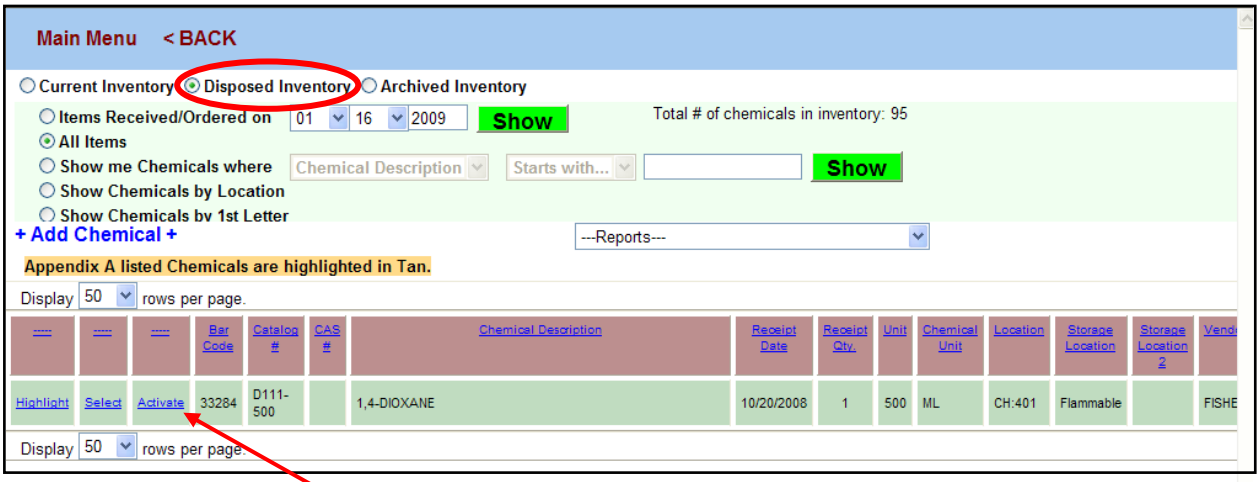
Click the down arrow to display your choices for the removal. Select your choice and click "Yes".

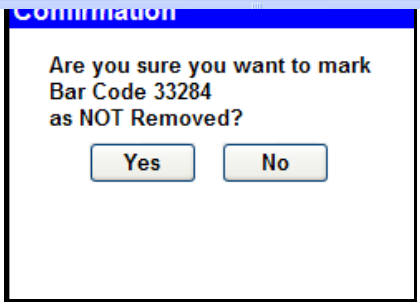



You will be returned to your inventory screen and the deleted item will no longer be listed.

## UNDO THE REMOVAL:

The item you removed will now be listed in your disposed inventory.
To view your listing of disposed inventory, click the **Disposed Inventory** button, circled in red below.

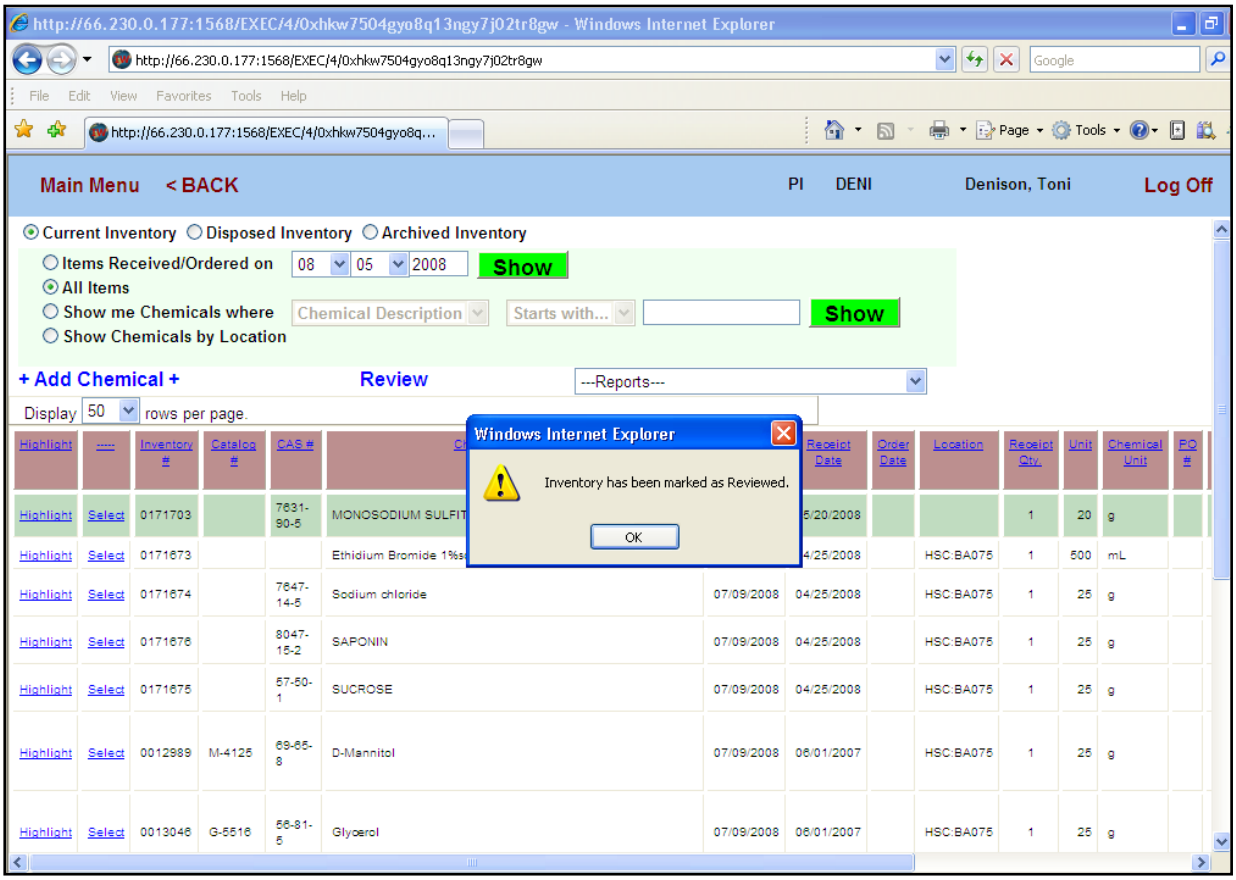



Confirm your intention to move the item to current inventory status by clicking **Yes**.
The item is removed from the disposed inventory listing. The item is now listed as current inventory.

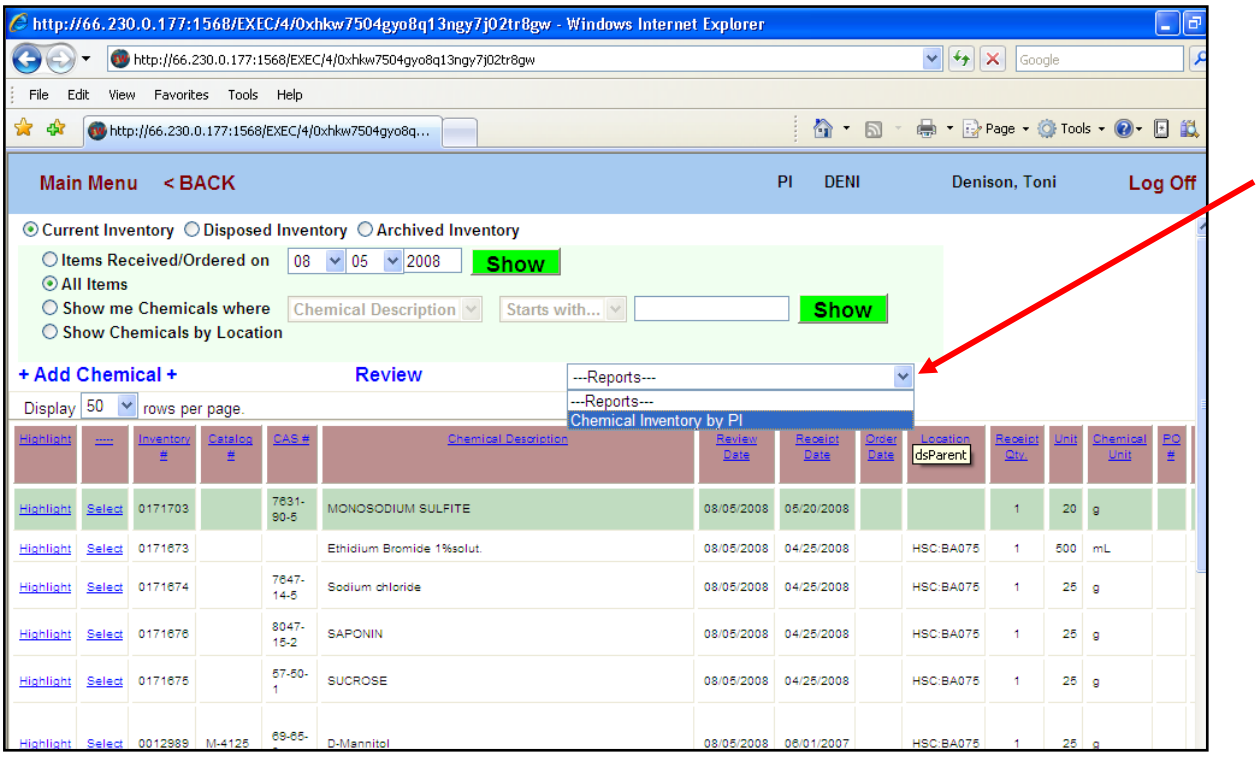
## MARKING INVENTORY AS REVIEWED:

Once you have reviewed your inventory and made any necessary updates, you may click the **Review** button on the main Inventory page. A pop up window will appear informing you that the "Inventory has been marked as Reviewed". Click **OK**. This button will automatically fill in the Review Date category with the current date for all items listed on the inventory.

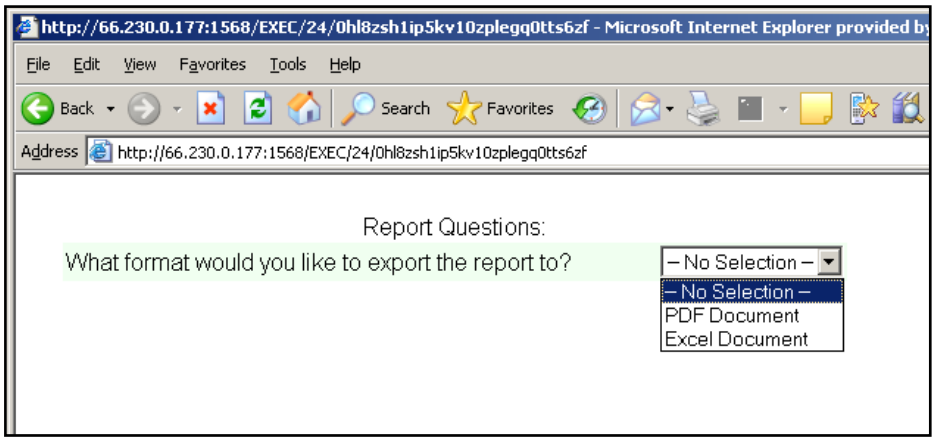


## PRINTING YOUR INVENTORY:

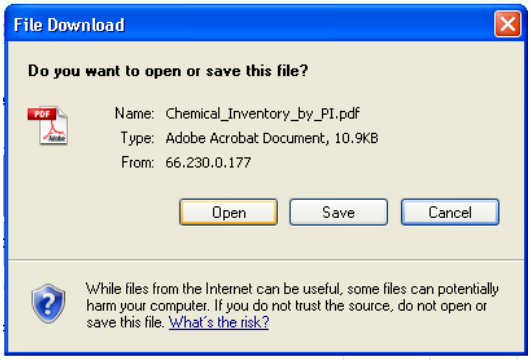
Drop down the Reports menu located just above your chemical list. Select the report that you wish to print.
You may need to turn off any pop-up blockers that you have enabled.




Once you have chosen the report, you will be prompted to choose a report format. You can export the file as a PDF or an Excel file. Choose the format that you would like, and click OK.
NOTE: Unless you need to manipulate the data, the PDF format is the more appealing format.

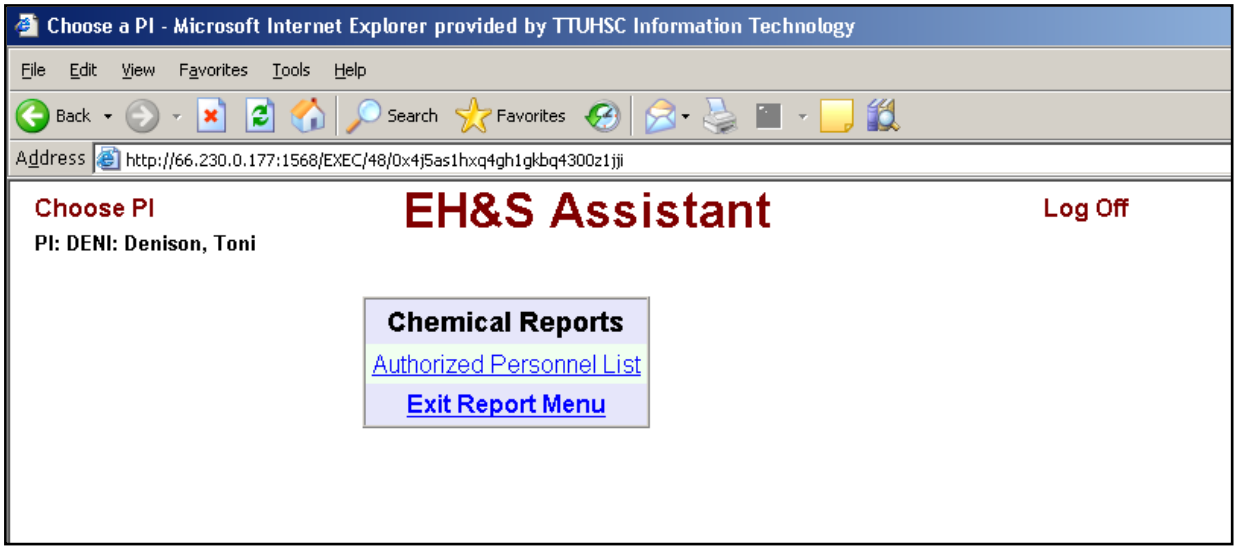



Then you will be prompted to open or save the inventory file, which you may print:


File Download
Do you want to open or save this file?
Name: Chemical_Inventory_by_PI.pdf
Type: Adobe Acrobat Document, 10.9KB
From: 66.230.0.177
Open
Save
Cancel
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

## REPORTS:

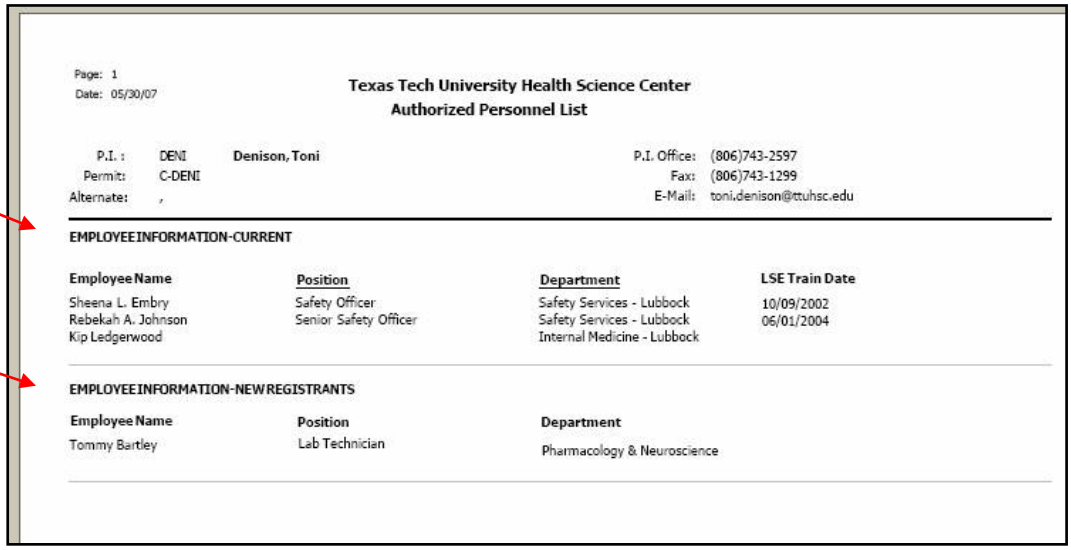
Once you have updated your personnel in the **Permit Worker Registration** section (see page 12) of EH&S Assistant, you may view and print an updated list to post in your laboratory by clicking on **Authorized Personnel List**. Once you have viewed and printed your updated list you **Exit Report Menu** to return to the main menu.




Please note that the Authorized Personnel List may have 2 sections of workers. The top section is the list of **current employees** that were registered prior to logging into EH&S Assistant. The second section lists the **newly registered** employees. Once any additions are imported into the system by Safety Services, the newly registered employee's name will move from the new registrants section to the current employee section.

Current

New



Page: 1
Date: 05/30/07

Texas Tech University Health Science Center
Authorized Personnel List

P.I. : DENI Denison, Toni
Permit: C-DENI
Alternate: ,

P.I. Office: (806)743-2597
Fax: (806)743-1299
E-Mail: toni.denison@ttuhsc.edu

EMPLOYEE INFORMATION-CURRENT

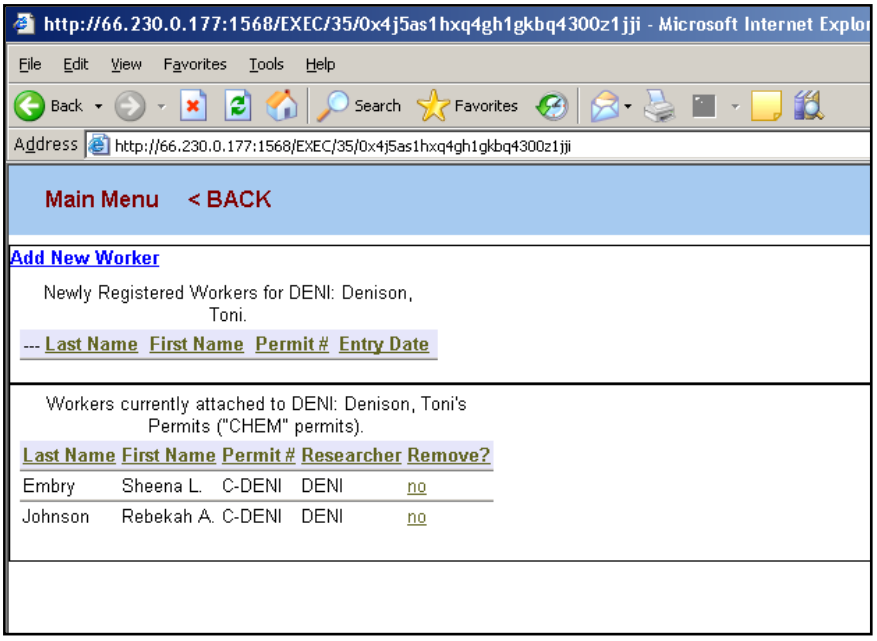
| Employee Name | Position | Department | LSE Train Date |
|---|---|---|---|
| Sheena L. Embry | Safety Officer | Safety Services - Lubbock | 10/09/2002 |
| Rebekah A. Johnson | Senior Safety Officer | Safety Services - Lubbock | 06/01/2004 |
| Kip Ledgerwood | | Internal Medicine - Lubbock | |

EMPLOYEE INFORMATION-NEW REGISTRANTS

| Employee Name | Position | Department |
|---|---|---|
| Tommy Bartley | Lab Technician | Pharmacology & Neuroscience |

## PERMIT WORKER REGISTRATION:

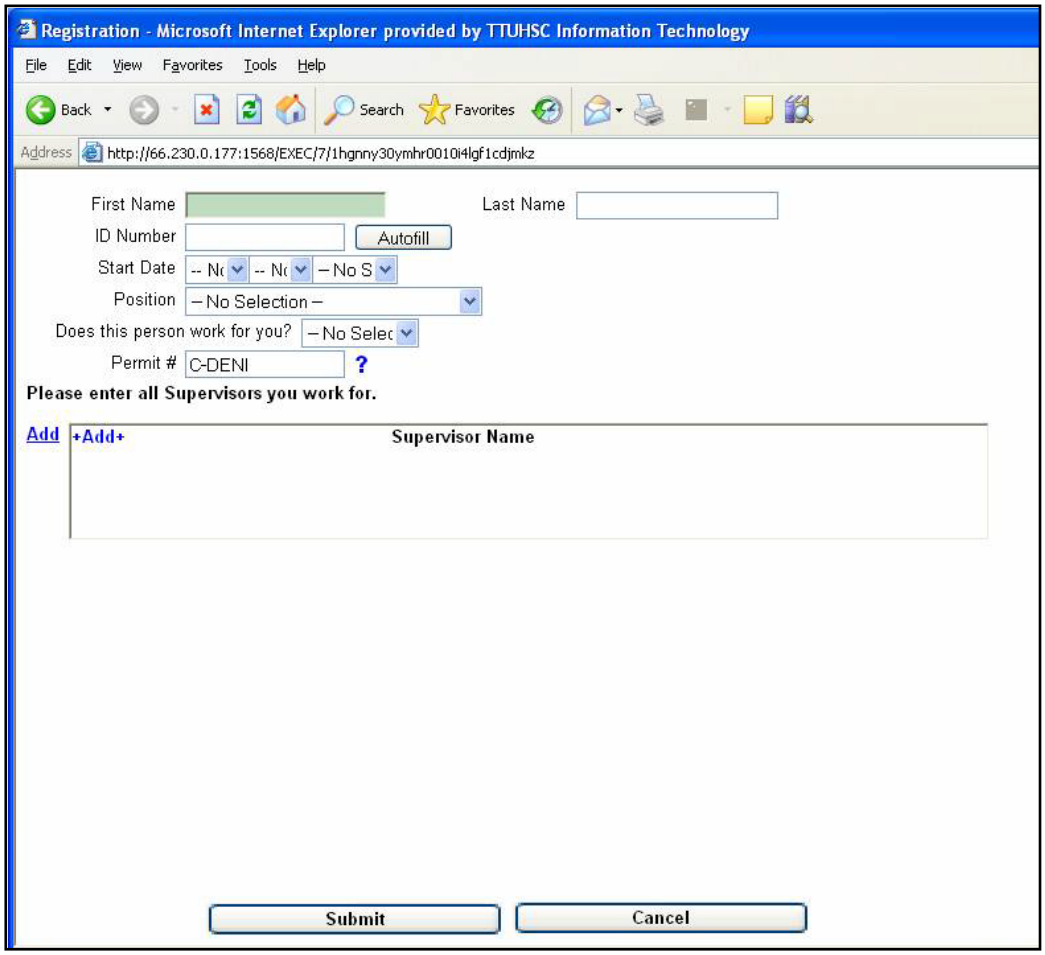
This link is where you edit your personnel. Please notice that there is a section for **Newly Registered Workers** and one for **Workers currently attached**.



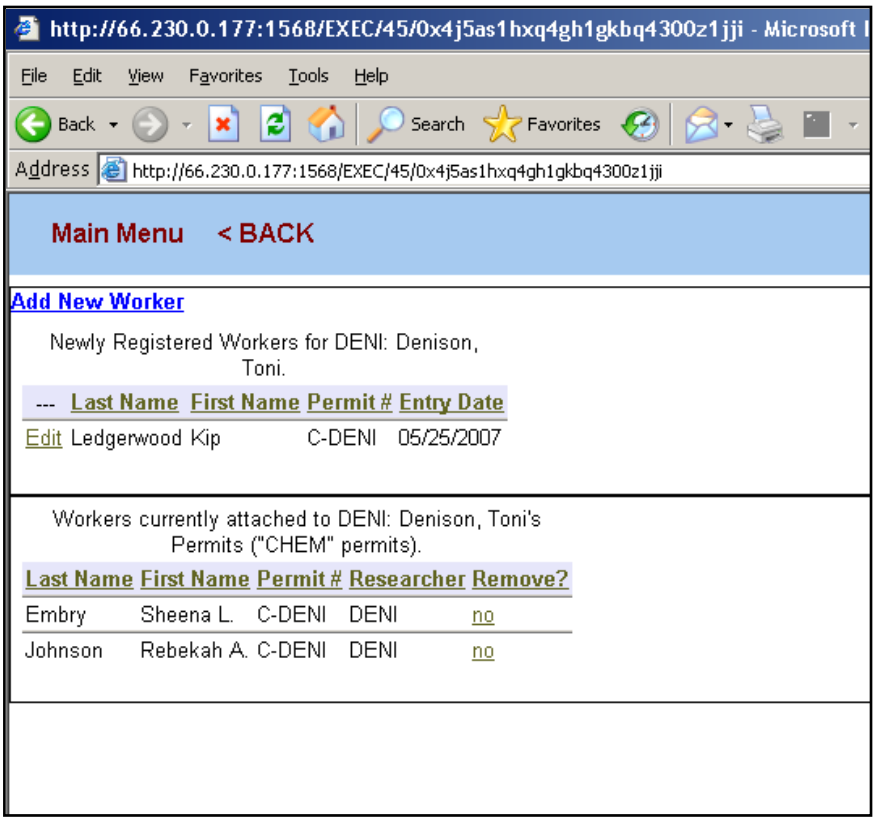
## ADDING A NEW WORKER:

Click on **Add New Worker** and the screen below will appear. If you do not know the ID Number for the worker you may click **Autofill** and a random number will be assigned for that individual. Once you have completed the information click on **Submit** at the bottom of the page.

NOTE: If you have a radiation permit for your lab, you will need to add any new workers to BOTH permits. The process is the same for each permit.



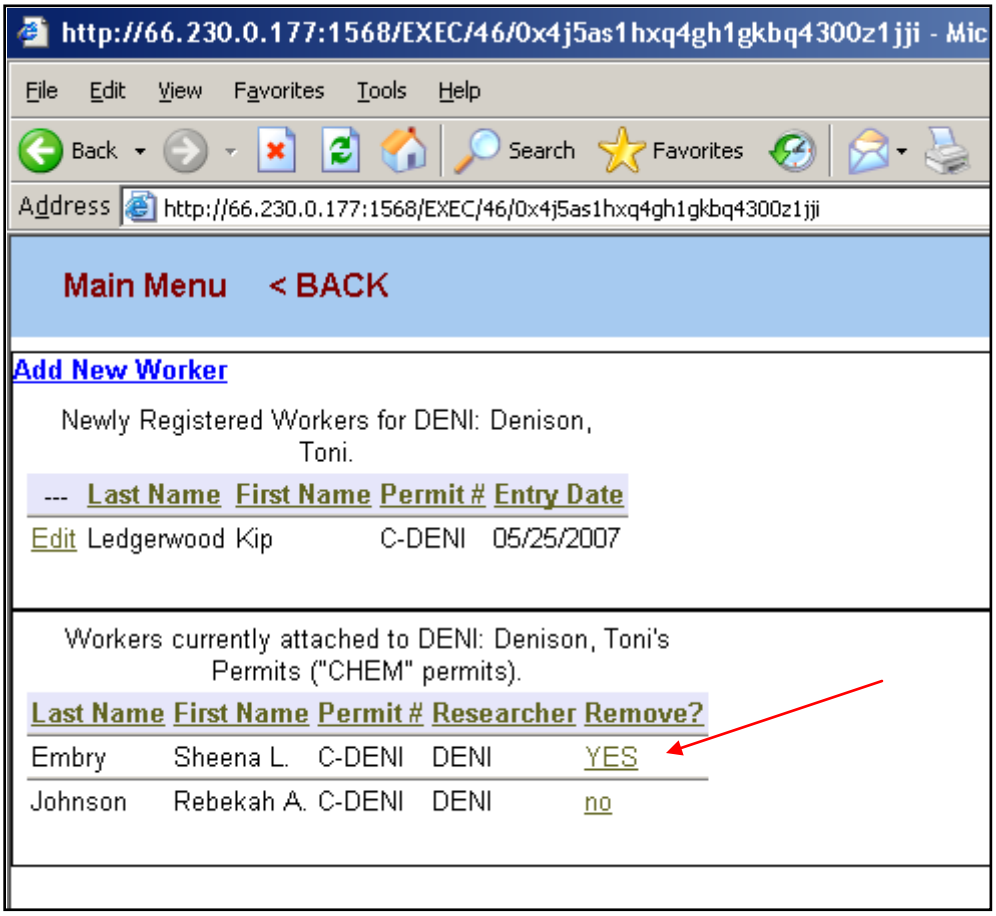
Once the information for a new worker has been submitted, you will be re-directed back to the Permit Worker Registration list. Under the **Newly Registered Workers** section you should see the name of the person you just entered. Below that will be the original list of people.



## REMOVING A WORKER:

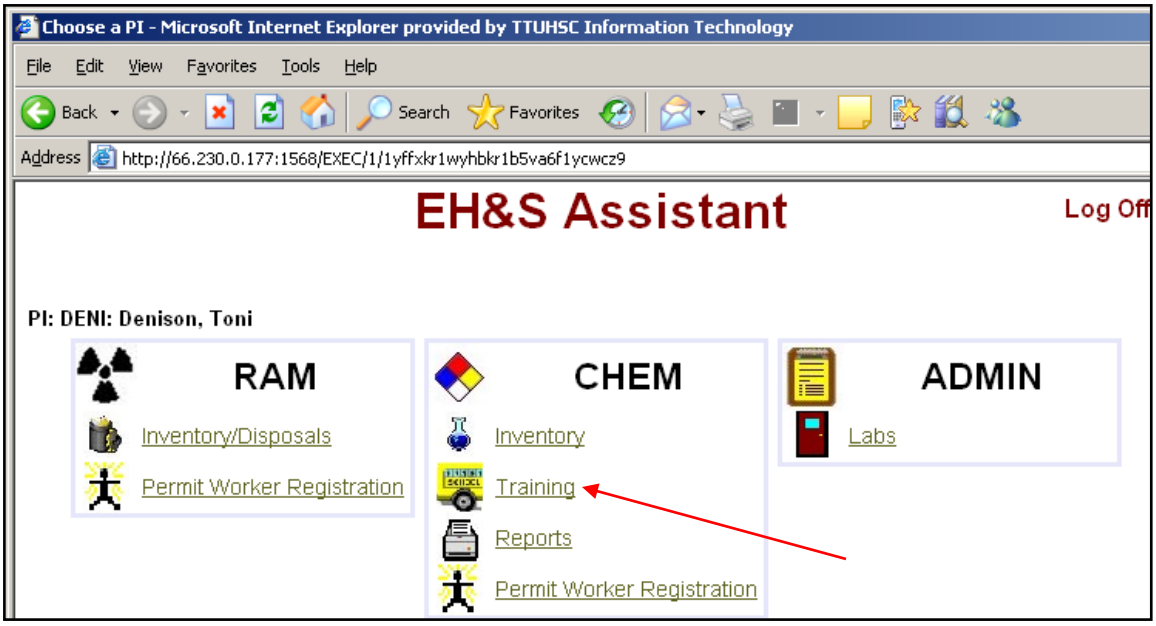
To remove a worker from your permit, click under the **Remove?** heading on the **no** to change it to **YES**. (See red arrow below.)

The person's name will remain under the **Workers currently attached** section until Safety Services imports the changes into the program. However, once you have indicated that a particular worker needs to be removed, their name **WILL NOT** appear on your **Authorized Personnel List** found under the **Reports** portion of the menu. This will allow you to print a current authorized personnel list to post in your laboratory.

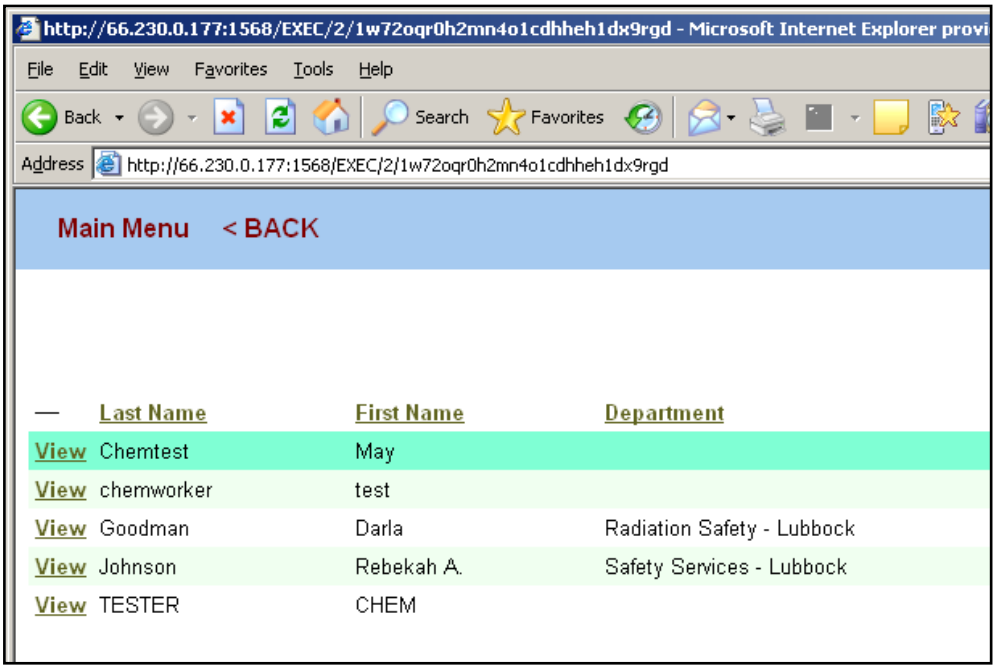


## VIEW WORKER TRAINING RECORDS:

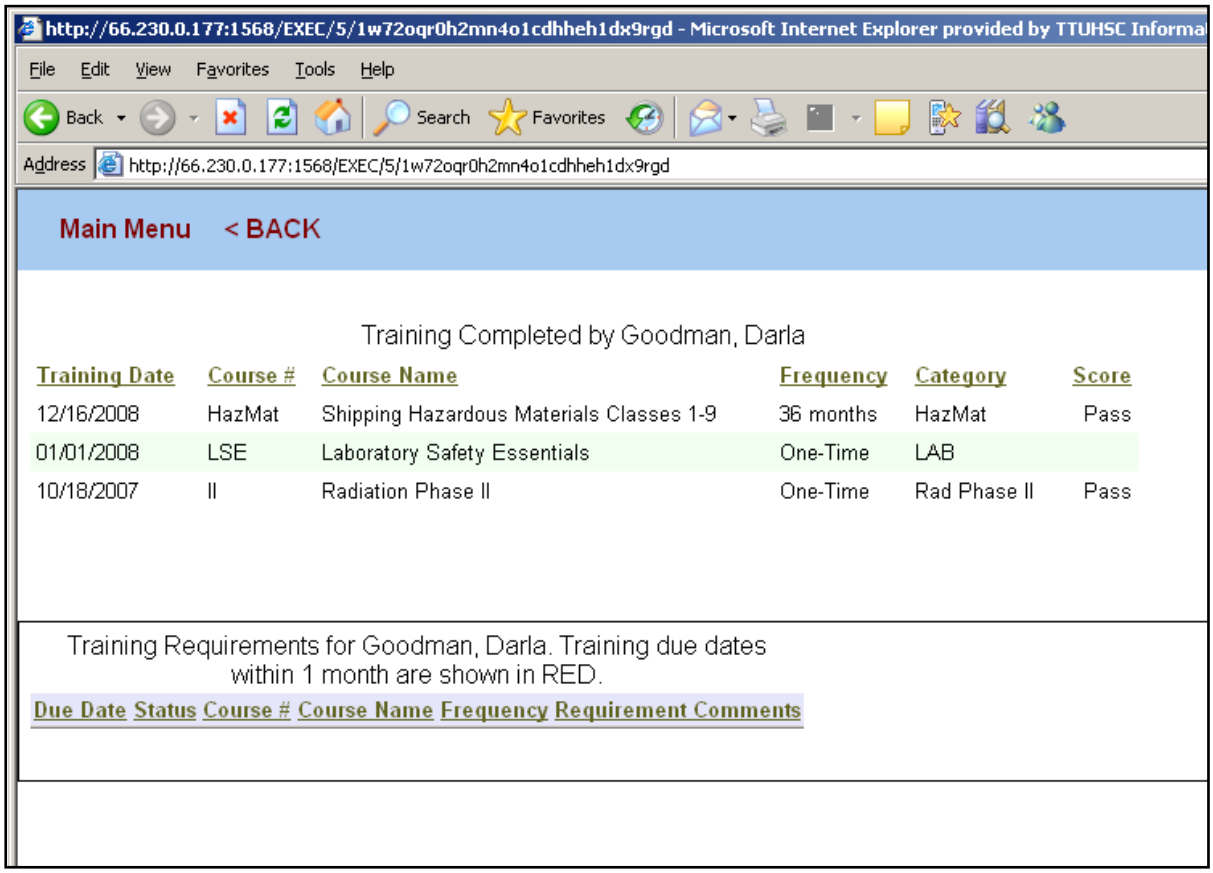
From the Main Menu, click on the **Training** link. (see red arrow below)




A list of your workers will appear.

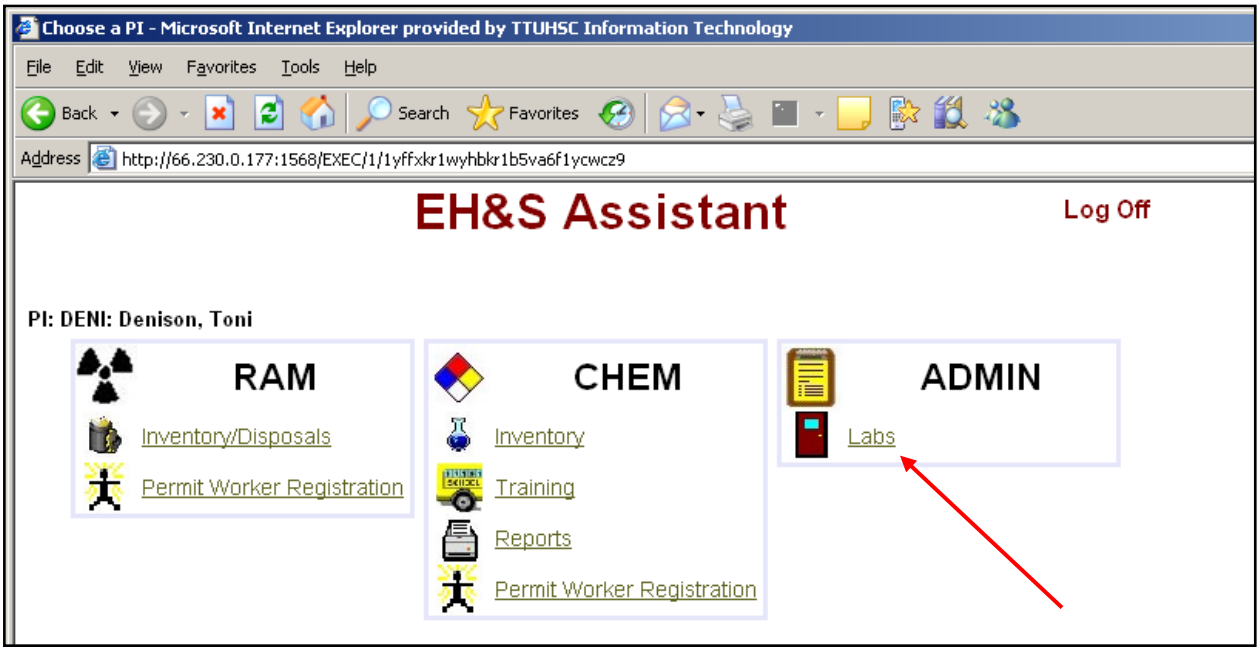


To view the training records for any of these employees, click on the **View** link next to their name. The workers training history will appear.

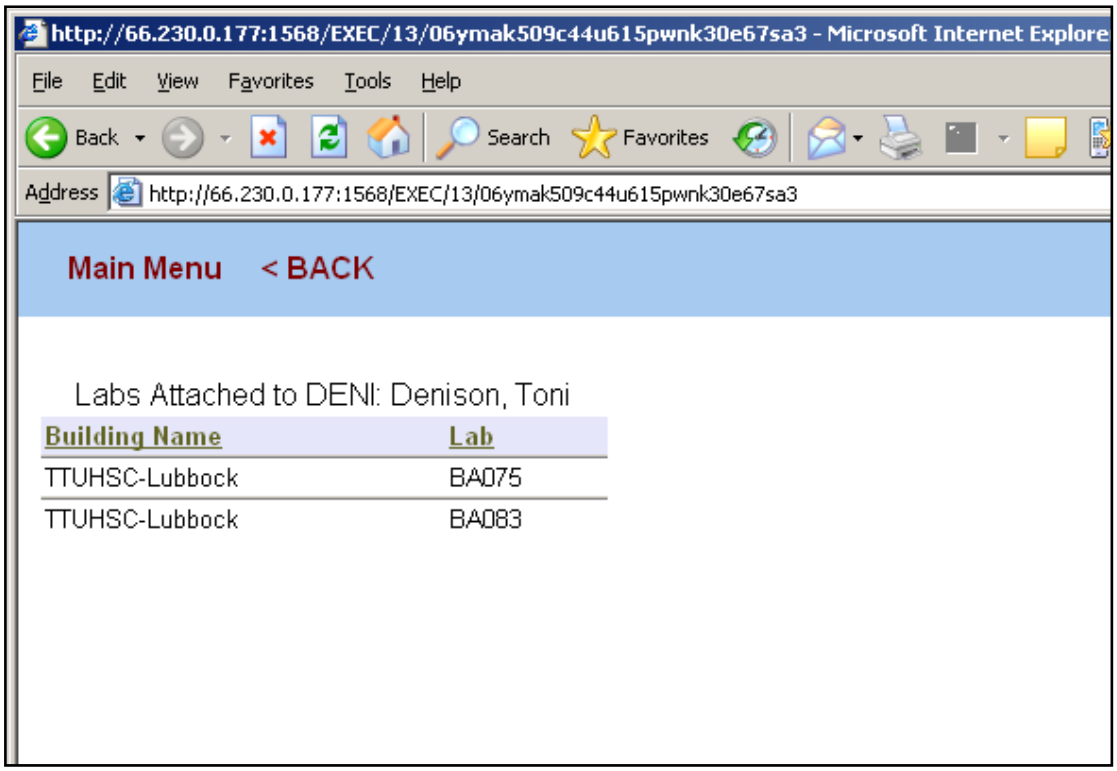


## VIEW YOUR LABS:

From the main menu, click on the **Labs** link. (see red arrow below)

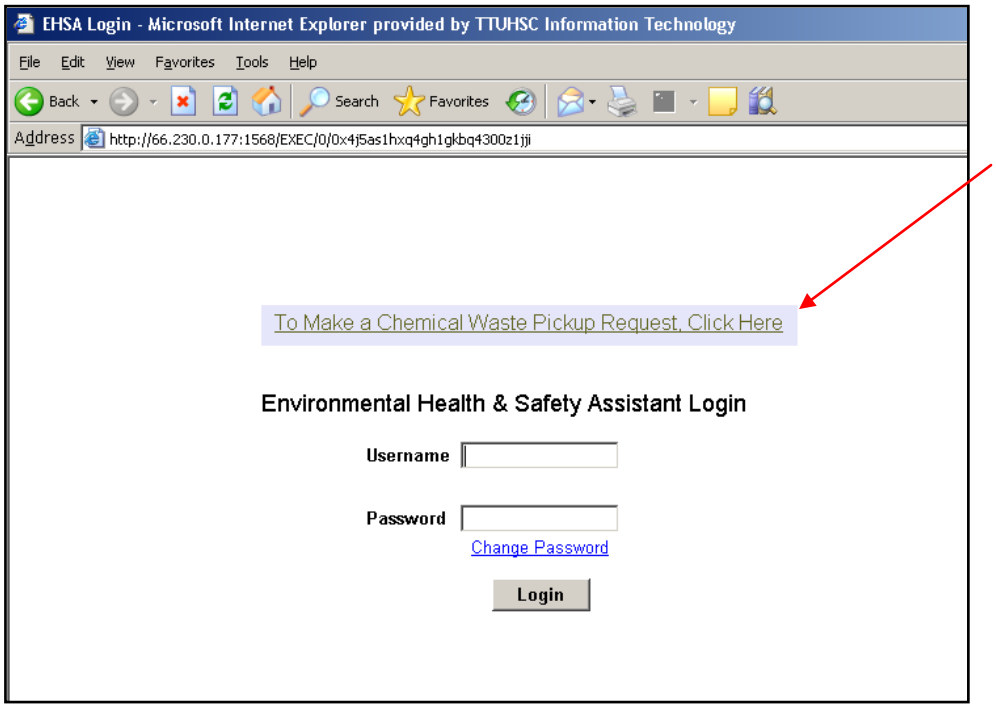



Then you will see a list of the laboratory room numbers that are attached to your name. This is read-only. If you see errors, please call Safety Services.

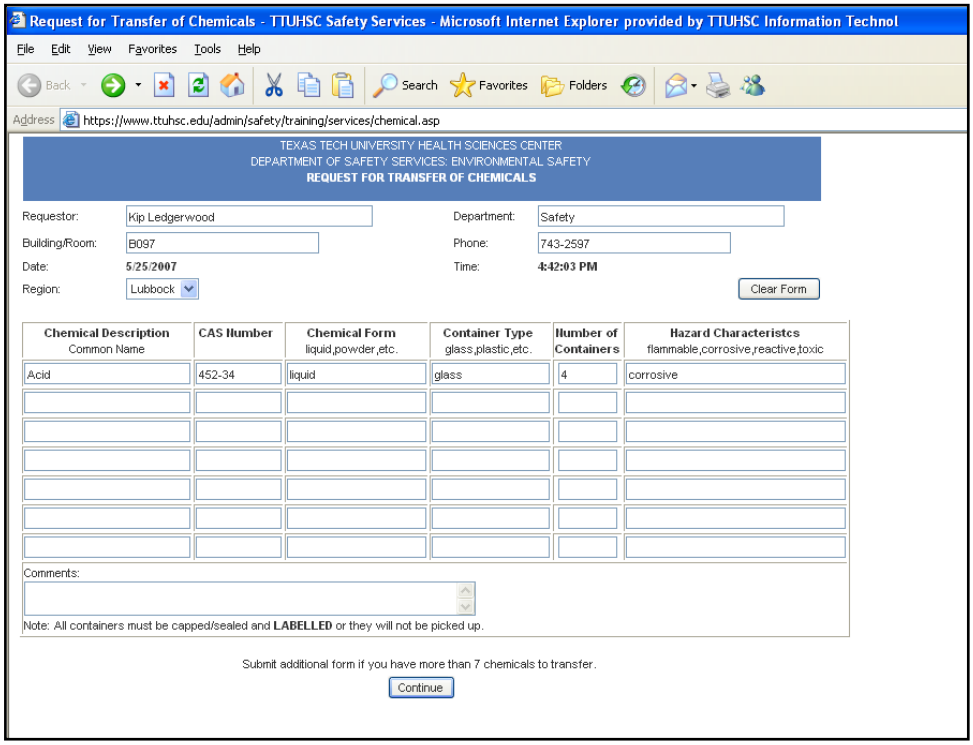


## CHEMICAL WASTE PICKUP REQUEST:

The link at the top of the login screen can be accessed without logging into EHSA. To submit a request to Safety Services for a chemical waste pickup, click on the link.

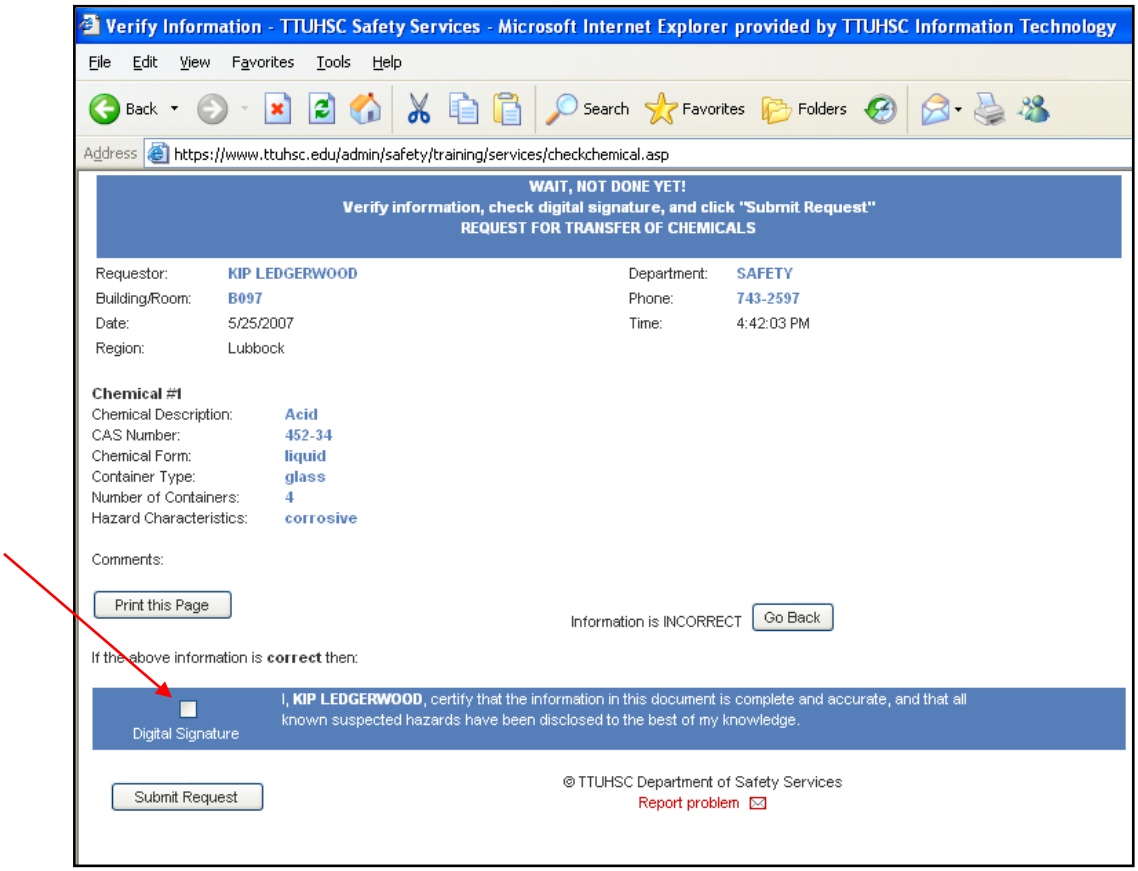



Fill in the form below with the appropriate information and click **Continue**.



The next screen should look similar to the one below. Here you have the option to **Print this Page** for your records. The checkbox above the words **Digital Signature** must be marked in order to submit your request. (See red arrow below.)

Once your request has been submitted, a page similar to the one below should appear.




Once Safety picks up the chemicals, we will remove them from the inventory.

# Texas Hazard Communication Act

- You, as an employee, have a **Right to Know** about the hazardous materials used in your work area and the potential effects of these materials upon your health and safety.
- You are informed of these hazards in the following ways…

# Where is the information?

- **Chemical Inventory** -
  - Request a copy of your lab's chemical inventory from your supervisor or from Safety Services.
- **Material Safety Data Sheets (MSDS)** –
  - Vendors may send hard copies when a chemical is purchased. The lab should keep these MSDSs in a designated binder or location.
  - May also be found online at:

    http://siri.org/msds/
- **Labeling** - Containers must have labels which identify the material and warn of its potential hazards

# When Do You Use an MSDS?

- Whenever you need additional information about a hazardous material that is not included on the label.


- For example, you have just spilled nitric acid on the floor, and you need to know how to clean it up safely.
  - **refer to section 6 of the nitric acid MSDS, “Accidental release measures” for instructions on safe clean up.**

# Doing your part…

- **Bookmark the MSDS site on your browser:**
  **http://siri.org/msds/**
- **Read labels and MSDSs *before* using a substance.**
- **Do not deface or remove labels, and replace when necessary.**

# Texas Tech University Health Sciences Center

## Right-To-Know Acknowledgement Form

I certify I have read the training pursuant to the Right-To-Know Act and know where to locate MSDS sheets.

Name: _____ Signature: _____
Title: _____ Date: _____

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# BIOHAZARDOUS AGENTS REQUIRING
# TTUHSC Institutional Safety Committee (IBC)
# PROTOCOL REGISTRATION

**INSTRUCTIONS:** When registering hazardous biological or chemical agents, the IBC Protocol Registration Application form (http://www.ttuhsc.edu/admin/safety/lab/e_regform_2-08.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.ttuhsc.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: All manipulations of select agents at TTUHSC must be in accordance with institutional policy 73.12. You may find the policy at this link: http://www.ttuhsc.edu/HSC/OP/OP73/op7312.pdf

**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. Perfirngens* 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. chelonei, 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*
--*Microsporum*
--*Paracoccidioides braziliensis*
--*Penicillium marneffei*
--*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. granulosis, 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. peruvania, 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
Prions
--Transmissible spongioform encephalopathies (TME) agents (Creutzfeldt-Jacob disease and kuru agents, (BSE) Bovine spongiform encephalopathy agent)
--West Nile virus
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)
--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)
Hemorrhagic fever agents and viruses as yet undefined

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

**Fungal Agents**
--*Mycoplasma capricoluml* / 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
--*Schlerophthora 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.ttuhsc.edu/admin/safety/lab/e_regform_2-08.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.ttuhsc.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.ttuhsc.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. Contact Laboratory Safety (806-743-2597) for a template. 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 |
|---|---|---|---|
| **1,3-Butadiene diepoxide (78 mg/kg LD50)** | 1464-53-5 | "4"HEALTH | toxic, carcinogen |
| **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 |
| **acontinine (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 |
| **carbamylcholine chloride (carbachol) (40 mg/kg LD50)** | 51-83-2 | "3"HEALTH | toxic |
| **carbon fuchsin (36 mg/kg LD50)** | 4197-24-4 | "4"HEALTH | toxicant |
| **Cercopithecine herpesvirus 1 (Herpes B virus)** | 139381-88-7 | SELECT AGENT | 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 l)** | 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, | toxicant, toxic gas, fire hazard |
| **melphalan (11.2 mg/kg LD50)** | 148-82-3 | "3" HEALTH | toxic |
| **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 |

| | | | |
|---|---|---|---|
| ***N,N*-Dimethyl-*p*-phenylenediamine sulfate salt** | 536-47-0 | 4"HEALTH | toxicant |
| **omega conotoxin GI** | 76862-65-2, 115797-06-3 | 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 | toxicant, 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** | 9009-86-3 | | |
| **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, 35523-89-8 | 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 |
| **sodium fluoride (31 mg/kg LD50)** | 7681-49-4 | "3"HEALTH | toxicant |
| **sodium selenite (7 mg/kg LD50)** | 10102-18-8 | "4"HEALTH | toxicant |
| **Staphylococcal enterotoxins** | 11100-45-1 | SELECT 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 |
| **vinorelbine (26-34 mg/kg LD50)** | 125317-39-7 | "3" HEALTH | toxic |
| **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.

# Chemical Hygiene Plan*
# for
(name of Principal Investigator)
(laboratory room numbers)

In this document, “the above listed Principal Investigator” refers to the Principal Investigator listed on this page and “the above listed laboratory room numbers” refers to the laboratory room numbers listed on this page.

*Adapted from National Research Council Recommendations Concerning Chemical Hygiene in Laboratories (Non-Mandatory)

# Table of Contents

# Foreword

All laboratories* that use hazardous chemicals** must implement a Chemical Hygiene Plan. This requirement is based on the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) standard: "Occupational Exposures to Hazardous Chemicals in Laboratories" 29CFR1910.1450.

The purpose of this Chemical Hygiene Plan is to define work practices and procedures to ensure that all laboratory workers in the above listed room numbers working for the above listed Principal Investigator (PI) are protected from health hazards associated with the hazardous chemicals with which they work.

Much of the following information was extracted from *Prudent Practices for Handling Hazardous Chemicals in Laboratories* (referred to below as *Prudent Practices*), which was published in 1995 by the National Research Council and is available in the *Texas Tech University Health Sciences Center Laboratory Safety Manual* which is online and can be located on the safety services web site. *Prudent Practices* is cited due to its wide distribution and acceptance and because of its preparation by members of the laboratory community through the sponsorship of the National Research Council. The recommendations from *Prudent Practices* have been paraphrased, combined, or otherwise reorganized, and headings have been added; however, the meaning and intent has not been changed.

> *OSHA defines a laboratory as "a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis."
>
> ** OSHA defines a hazardous chemical as "a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principals that acute or chronic health effects may occur in exposed employees.

In addition to the more detailed recommendations listed below in sections B-E, *Prudent Practices* expresses certain general principles, including the following:

1. It is prudent to minimize all chemical exposures. Because few laboratory chemicals are without hazards, general precautions for handling all laboratory chemicals should be adopted, rather than specific guidelines for particular chemicals. Skin contact with chemicals should be avoided as a cardinal rule.

2. Avoid underestimation of risk. Even for substances of no known significant hazard, exposure should be minimized; for work with substances that present special hazards, special precautions should be taken. One should assume that any mixture will be more toxic than its most toxic component and that all substances of unknown toxicity are toxic.

3. Provide adequate ventilation. The best way to prevent exposure to airborne substances is to prevent their escape into the working atmosphere by use of hoods and other ventilation devices.

4. Institute a chemical hygiene program. A mandatory chemical hygiene program designed to minimize exposures is needed; it should be a regular, continuing effort, not merely a standby or short-term activity. Its recommendations should be followed in academic teaching laboratories as well as by full-time laboratory workers.

5. Observe PEL and TLV. The Permissible Exposure Limits of OSHA and the Threshold Limit Values of the American Conference of Governmental Industrial Hygienists should not be exceeded. These limits may be obtained by reading a Material Safety Data Sheet (MSDS) for the chemical of interest. You can easily access a MSDS by going to the safety services web site or entering the following location into your browser:

http://siri.org/msds

## B. Chemical Hygiene Responsibilities

Responsibility for chemical hygiene rests at all levels including:

1. The above listed Principal Investigator, who has ultimate responsibility for chemical hygiene within the above listed laboratory room numbers and must, with other members of the laboratory, provide continuing support for this chemical hygiene plan. Other responsibilities as outlined by the TTUHSC Laboratory SOP, Chemical Hygiene Plan include:
    a. Ensuring that labels on incoming containers of chemicals are not removed or defaced.

    b. Maintaining legible copies of all MSDS's that are received in the laboratory and that the MSDS's, the SIRI website and other chemical reference materials are readily available and known to the laboratory personnel.

    c. Maintaining a shortcut icon for SIRI on the desktops of all computers in the laboratory so that all laboratory employees can readily access chemical information.

    d. Registering all chemicals that are listed on the document titled "Hazardous Toxicants and Toxins Requiring IBC Protocol Registration" and the document titled "Biohazardous Agents Requiring IBC Protocol Registration" located on the Safety Services website (http://www.ttuhsc.edu/Admin/safety/default.htm).

e. Submitting an MS Excel spreadsheet listing the full chemical and biological inventory of the laboratory. The inventory shall be submitted to Safety Services prior to licensing, and annually thereafter. The inventory shall be regularly maintained, and kept up-to-date through the on-line inventory system EH&S, http://www.ttuhsc.edu/admin/safety/chemlist .

f. Registering and/or licensing with the appropriate TTUHSC Committee (IACUC, RSC, IRB, or Recombinant DNA), activities or protocols which include animals, radioactive materials, human subjects, or recombinant DNA.

g. Segregating hazardous chemicals by compatibility (See the online TTUHSC *Laboratory Safety Manual* under Prudent Practices, Chapter 4, Management of Chemicals, Section 4E) and separating from nonhazardous dry chemicals.

h. Providing the laboratory specific information under the SOP section of the TTUHSC *Laboratory Compliance Manual* which will facilitate the protection of employees from the health hazards associated with hazardous chemicals in the laboratory to the Department Head. This information will be available to the IBC, IACUC, RSC, inspectors, and TTUHSC Administration upon request. The original documents shall become part of the TTUHSC *Laboratory Compliance Manual*, specific to the given laboratory, under the SOP Tab of the manual. These SOP's shall be reviewed and evaluated annually by the PI for effectiveness, updated as necessary, and shall include the following:

(1) Documented exposure determinations on hazardous chemical and particularly highly hazardous chemical activities in the laboratory to ensure that personnel exposures do not exceed the PEL for the chemical. This process of determination may involve implementing control measures such as engineering controls (use of an operating fume hood), work practices, or use of personal protective equipment and personal hygiene practices.

(2) Specific conditions and procedures for the safe use and handling of hazardous chemicals to reduce or eliminate exposure. These handling procedures shall include spill or release response planning, emergency shut-down procedures, decontamination and clean-up procedures, aerosol generation reduction processes, and appropriate waste disposal methods.

(3) Appropriate personal protective equipment and safety equipment for the specific activities and categories of hazardous chemicals present, including information on their use, limitations, storage, maintenance, repair, cleaning, and disposal.

(4) Information on first aid treatment to be used with respect to the categories of hazardous chemicals to which personnel may be exposed, including accident/incident reporting, and obtaining medical attention.

(5) Information on health and physical risks associated with categories of hazardous chemicals used in the laboratory, including signs and symptoms of exposure, and methods and observations that may be used to detect the presence or release of a hazardous chemical such as monitors (if applicable), visual appearance, or odor. This information must advise personnel that specific information is available for individual chemicals through the MSDS's.

i. Providing appropriate information to physicians in cases of occupational exposure or suspected exposure. This information includes: identity of the hazardous chemical (s), conditions of exposure and quantities involved, and signs and symptoms of the exposure.

j. Providing specialized training applicable to the specific activities, including performance evaluations for the proper conduct of these assigned activities. This training for new or newly assigned personnel shall take place before the person works with or in an area containing hazardous chemicals.

k. Providing additional information and training as different hazards are introduced into the specific activities of personnel or new and significant information concerning the hazards of a highly hazardous chemical is received.

l. Providing a record of each training session given to personnel, including the date, roster of the persons who attended, the subjects covered in the training session, and the names of the instructors. This record shall be maintained in the TTUHSC Laboratory Compliance Safety Manual with copies provided to the Department Head and Safety Services. All training will be documented.

**I understand that all of the above listed items are primarily my responsibility and that although I may assign a member of my laboratory staff to carry out these duties, the ultimate responsibility for all of the above items remains with me.**

_____ _____

(Signature of Principal Investigator) (Date)

2. The Chemical Hygiene Officer, who serves as a consultant shall:

   a. Work with administrators and other personnel to develop and implement appropriate chemical hygiene policies and practices;

   b. Monitor procurement, use, and disposal of chemicals used in the laboratories;

   c. Ensure that appropriate audits are maintained;

   d. Help project directors develop precautions and adequate facilities;

   e. Know the current legal requirements concerning regulated substances; and

   f. Seek ways to improve the chemical hygiene program.

**I understand that the above listed items are primarily my responsibility; I will serve as a consultant for the above listed principal investigator in the above duties and upon request.**

_____ _____

(Signature of CHO) (Date)

3. The Laboratory Supervisor, _____, who has overall responsibility for chemical hygiene in the laboratory including responsibility to:

   a. Ensure that workers know and follow the chemical hygiene rules, that protective equipment is available and in working order, and that appropriate training has been provided;

   b. Provide regular, formal chemical hygiene and housekeeping inspections including routine inspections of emergency equipment;

   c. Know the current legal requirements concerning regulated substances;

d. Determine the required levels of protective apparel and equipment; and

e. Ensure that facilities and training for use of any material being ordered are adequate.

**I understand that the above listed duties belong to me as the laboratory supervisor. I will complete all of the above listed duties.**

_____

(Signature of Laboratory Supervisor) (Date)

4. Laboratory worker, who is responsible for:

   a. Planning and conducting each operation in accordance with the institutional chemical hygiene procedures; and

   b. Developing good personal chemical hygiene habits.

(Signature required at end of document)

## C. The Laboratory Facility

1. Design. The laboratory facility should have:

   a. An appropriate general ventilation system (see C4 below) with air intakes and exhausts located so as to avoid intake of contaminated air;

   b. Adequate, well-ventilated stockrooms/storerooms;

   c. Laboratory hoods and sinks;

   d. Other safety equipment including eyewash fountains and drench showers; and

e. Arrangements for waste disposal.

2. Maintenance. Chemical-hygiene-related equipment (hoods, incinerator, etc.) should undergo continual appraisal and be modified if inadequate. Chemical fume hoods are tested three (3) times per year by TTUHSC Safety Services for adequate flow rate to provide protection to laboratory employees when used properly.

3. Usage. The work conducted and its scale must be appropriate to the physical facilities available and, especially, to the quality of ventilation. If any questions arise about proper usage of physical facilities, personnel should contact TTUHSC Plant Operations.

4. Ventilation.

a. General laboratory ventilation. This system should:

i Provide a source of air for breathing and for input to local ventilation devices;

ii Not be relied on for protection from toxic substances released into the laboratory;

iii Ensure that laboratory air is continually replaced, preventing increase of air concentrations of toxic substances during the working day; and

iv Direct air flow into the laboratory from non-laboratory areas and out to the exterior of the building.

b. Hoods. A laboratory hood with 2.5 linear feet of hood space per person should be provided for every 2 workers if they spend most of their time working with chemicals; each hood should have a continuous monitoring device to allow convenient confirmation of adequate hood performance before use.

c. Other local ventilation devices. Ventilated storage cabinets, canopy hoods, snorkels, etc. should be provided as needed. Each canopy hood and snorkel should have a separate exhaust duct.

d. Special ventilation areas. Exhaust air from glove boxes and isolation rooms should be passed through scrubbers or other treatment before release into the regular exhaust system. Cold rooms and warm rooms should have provisions for rapid escape and for escape in the event of electrical failure.

e. Modifications. Any alteration of the ventilation system should be made only if thorough testing indicates that worker protection from airborne toxic substances will continue to be adequate. These alterations should not be made by laboratory personnel, instead, TTUHSC Plant Operations should be contacted.

f. Performance. Rate: 4-12 room air changes/hour is normally adequate general ventilation if local exhaust systems such as hoods are used as the primary method of control.

g. Quality. General air flow should not be turbulent and should be relatively uniform throughout the laboratory, with no high velocity or static areas; airflow into and within the hood should not be excessively turbulent; hood face velocity should be adequate (typically 80 - 120 lfpm) If the hood doesn't function within the normal range it is the responsibility of the investigator to contact Plant Operations for repair.

h. Evaluation. Quality and quantity of ventilation should be evaluated on installation, regularly monitored, and reevaluated whenever a change in local ventilation devices is made.

## D. Components of the Chemical Hygiene Plan

1. Basic Rules and Procedures (Recommendations for these are given in section E, below)

2. Chemical Procurement, Distribution, and Storage

a. Procurement. Prior to receipt of a substance, information on proper handling, storage, and disposal should be known to those who will be involved. No container should be accepted without an adequate identifying label (this is the Principal Investigator's responsibility as listed above). Preferably, all substances should be received in a central location.

b. Stockrooms/storerooms (storage cabinets). Toxic substances should be segregated in a well-identified area with local exhaust ventilation. Chemicals which are highly toxic or other chemicals whose containers have been opened should be in unbreakable secondary containers. Stored chemicals should be examined periodically (at least annually) for replacement, deterioration, and container integrity. Stored chemicals will be examined every _____ months by _____ (name or title).

c. Distribution. When chemicals are hand-carried, the container should be placed in an outside container or bucket. Freight-only elevators shall be used as outlined in TTUHSC O.P. 75.07.

d. Laboratory storage. Amounts permitted should be as small as practical. Storage on bench tops and in hoods is inadvisable. Exposure to heat or direct sunlight should be avoided. Inventories should be conducted at least annually, with unneeded items being discarded or transferred to another laboratory. This periodic updating of the inventory will be performed by _____ (name or title) every _____ months.

3. Environmental Monitoring. Regular instrumental monitoring of airborne concentrations is not usually justified or practical in laboratories, however, may be appropriate when testing or redesigning hoods or other ventilation devices or when a highly toxic substance is stored or used regularly (e.g., 3 times/week).

4. Housekeeping, Maintenance, and Inspections.

a. Cleaning. Floors are cleaned nightly as outlined in the housekeeping contract.

b. Inspections. Formal housekeeping and chemical hygiene inspections should be held at least quarterly for units which have frequent personnel changes and semiannually for others; informal inspections should be continual. These housekeeping/chemical hygiene inspections will be performed by _____ (person or title) every _____ months. The Laboratory Safety Division of TTUHSC Safety Services, as commissioned by the TTUHSC Institutional Biohazards Committee (IBC), will perform semi-annual inspections.

c. Maintenance. Eye wash fountains should be tested by _____ (person or title) for usability (water flows out of eyewash when turned on) at intervals of not less than once a month, and formally tested for flow rate and temperature at least once per year by TTUHSC Safety Services. Respirators for routine use should be inspected periodically by the laboratory supervisor. Other safety equipment should be inspected regularly (e.g., every 3-6 months). Procedures to prevent restarting of out-of-service equipment should be established.

d. Passageways. Stairways and hallways should not be used as storage areas as outlined in TTUHSC O.P. 75.06. Access to exits, emergency equipment, and utility controls should never be blocked.

5. Medical Program

a. Compliance with regulations. Regular medical surveillance is established to the extent required by rules and regulations as outlined in TTUHSC O.P. 75.11.

b. Routine surveillance. Anyone whose work involves regular and frequent handling of toxicologically significant quantities of a chemical should consult a qualified physician to determine on an individual basis whether a regular schedule of medical surveillance is desirable.

c. First aid. Personnel trained in first aid are available during working hours and the nearest emergency room with medical personnel is University Medical Center. All laboratory personnel must be able to locate this emergency room and other preferable medical treatment areas for themselves and their fellow employees.

6. Protective Apparel and Equipment. The following are available to all members of this laboratory:

a. Protective apparel compatible with the required degree of protection for substances being handled;

b. An easily accessible drench-type safety shower;

c. An eyewash fountain;

d. A fire extinguisher;

e. Respiratory protection, fire alarm and telephone for emergency use nearby; and

f. The following additional items: _____

7. Records

a. Accident records shall be written and retained by the Workers Compensation Coordinator.

b. This Chemical Hygiene Plan documents that these facilities and precautions are compatible with current knowledge and regulations.

c. Inventory and usage records for high-risk substances will be kept as specified in sections E3e below.

d. Medical records are retained by the institution in accordance with the requirements of state and federal regulations.

8. Signs and Labels. Prominent signs and labels of the following types will be posted in the laboratory:

   a. Emergency telephone numbers of emergency personnel/facilities, supervisors, and laboratory workers _____ (location);

   b. Identity labels, showing contents of containers (including waste receptacles) and associated hazards;

   c. Location signs for safety showers, eyewash stations, other safety and first aid equipment, exits; and

   d. Warnings at areas or equipment where special or unusual hazards exist.

The above mentioned signs will be maintained by _____ (name or position).

9. Spills and Accidents

   a. A written emergency plan shall be established and maintained in the *TTUHSC Laboratory Compliance Manual* and communicated to all personnel; it will include procedures for ventilation failure, evacuation, medical care, reporting, and drills.

   b. There is an alarm system to alert people in all parts of the facility including isolation areas such as cold rooms.

   c. A spill control policy for each hazardous chemical used will be developed and will include consideration of prevention, containment, cleanup, and reporting for chemicals used or stored in these laboratories.

   d. All incidents or near-incidents will be carefully analyzed with the results distributed to all who might benefit.

The person responsible for the above mentioned spill and accident procedures is _____ (person or title)

10. Information and Training Program

   a. Purpose: To assure that all individuals at risk are adequately informed about the work in the laboratory, its risks, and what to do if an incident occurs.

   b. Emergency and Personal Protection Training: Every laboratory worker will know the location and proper use of available protective apparel and equipment. All laboratory personnel will be trained in the proper use of emergency equipment and procedures. Such training, as well as first aid

instruction, will be available to and encouraged for everyone who might need it. This training will be provided by the above listed Principal Investigator.

c. The above listed person in control of chemical storage will be familiar with hazards, handling equipment, protective apparel, and relevant regulations.

d. Frequency of Training: The training and education program given by the Principal Investigator will be a regular, continuing activity - not simply an annual presentation. Records of this training will be maintained as described above (under Principal Investigator's responsibilities).

e. Literature/Consultation: Literature and consulting advice concerning chemical hygiene are readily available to laboratory personnel, in the *TTUHSC Laboratory Compliance Manual*. Laboratory personnel should be encouraged to use this information resource.

11. Waste Disposal Program.

a. Purpose: To assure that minimal harm to people, other organisms, and the environment will result from the disposal of waste laboratory chemicals.

b. Content: The waste disposal program specifies how waste is to be collected, segregated, stored, and transported and include consideration of what materials can be incinerated. Transport from the institution must be in accordance with DOT regulations. All of this information is outlined in the TTUHSC *Regulated Waste Disposal Manuual,*which may be found on the safety services website. All policies for waste disposal are outlined in this manual. For any questions dealing with waste disposal, contact the Environmental Safety division of Safety Services.

c. Indiscriminate disposal by pouring waste chemicals down the drain or adding them to mixed refuse for landfill burial is unacceptable.

d. Hoods should not be used as a means of disposal for volatile chemicals.

e. Disposal by recycling or chemical decontamination should be used when possible.

## E. Basic Rules and Procedures for Working with Chemicals

The Chemical Hygiene Plan requires that laboratory workers know and follow the rules and procedures established by the plan. In addition to the procedures of the sub-programs mentioned above, the rules listed below should also be observed.

1. General Rules. The following should be used for essentially all laboratory work with chemicals:

   a. Accidents and spills

      i. Eye Contact: Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention.

      ii. Ingestion: MSDS will immediately be read and the recommendations followed regarding ingestion.

      iii. Skin Contact: Promptly flush the affected area with water and remove any contaminated clothing. If symptoms persist after washing, seek medical attention.

      iv. Clean-up. Promptly clean up spills, using appropriate protective apparel and equipment and properly dispose of waste.

   b. Avoidance of "routine" exposure: Develop and encourage safe habits; avoid unnecessary exposure to chemicals by any route;

      i. Do not smell or taste chemicals. Vent apparatus which may discharge toxic chemicals (vacuum pumps, distillation columns, etc.) into local exhaust devices.

      ii. Inspect gloves and test glove boxes before use.

      iii. Do not allow release of toxic substances in cold rooms and warm rooms, since these have contained recirculated atmospheres.

   c. Choice of chemicals: Use only those chemicals for which the quality of the available ventilation system is appropriate.

   d. Eating, smoking, etc.: Eating, drinking, smoking, gum chewing, or application of cosmetics in any laboratory at TTUHSC is prohibited; wash hands before exiting the laboratory and conducting these activities. Although hand lotion is considered a cosmetic and not recommended to be in the laboratory, it is acceptable if located at a desk or computer station. Storage, handling, or consumption of food or beverages in storage areas, refrigerators, glassware or utensils, which are located in the laboratory, is prohibited.

   e. Equipment and glassware: Handle and store laboratory glassware with care to avoid damage; do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to

contain chemicals and fragments should implosion occur. Use equipment only for its designed purpose.

f. Exiting: Wash areas of exposed skin well before leaving the laboratory.

g. Horseplay: Avoid practical jokes or other behavior that might confuse, startle or distract another worker.

h. Mouth suction: Do not use mouth suction for pipeting or starting a siphon.

i. Personal apparel: Confine long hair and loose clothing. Wear shoes at all times in the laboratory but do not wear sandals or perforated shoes.

j. Personal housekeeping: Keep the work area clean and uncluttered, with chemicals and equipment being properly labeled and stored; clean up the work area on completion of an operation or at the end of each day.

k. Personal protection:

   i. Assure that appropriate eye protection is worn by all persons, including visitors, where chemicals are stored or handled.

   ii. Wear appropriate gloves when the potential for contact with toxic materials exists; inspect the gloves before each use, wash them before removal, and replace them periodically.

   iii. Use appropriate respiratory equipment when air contaminant concentrations are not sufficiently restricted by engineering controls, inspecting the respirator before use.

   iv. Use any other protective and emergency apparel and equipment as appropriate.

   v. Avoid use of contact lenses in the laboratory unless necessary; if they are used, inform supervisor so special precautions can be taken.

   vi. Remove laboratory coats immediately on significant contamination.

l. Planning: Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.

m. Unattended operations: Leave lights on, place an appropriate sign on the door, and provide for containment of toxic substances in the event of

failure of a utility service (such as cooling water) to an unattended operation.

n. Use of hood: Use the hood for operations that might result in release of toxic chemical vapors or dust.

i. As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substance with a TLV of less than 50 ppm.

ii. Confirm adequate hood performance before use; keep hood closed at all times except when adjustments within the hood are being made; keep materials stored in hoods to a minimum and do not allow them to block vents or air flow.

iii. Leave the hood "on" when it is not in active use if toxic substances are stored in it or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is "off".

o. Vigilance: Be alert to unsafe conditions and see that they are corrected when detected.

p. Waste disposal: Assure that the plan for each laboratory operation includes plans and training for waste disposal.

i. Deposit chemical waste in appropriately labeled receptacles and follow all other waste disposal procedures of the TTUHSC *Regulated Waste Disposal Manual*.

ii. Do not discharge to the sewer concentrated acids or bases; highly toxic, malodorous, or lachrymatory substances; or any substances which might interfere with the biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage or obstruct flow.

q. (q) Working alone: Avoid working alone in a building; do not work alone in a laboratory if the procedures being conducted are hazardous.

2. Working with Allergens and Embryotoxins

a. Allergens (examples: diazomethane, isocyanates, bichromates): Wear suitable gloves to prevent hand contact with allergens or substances of unknown allergenic activity.

b. Embryotoxins (examples: organomercurials, lead compounds, formamide):

i. If you are a woman of childbearing age, handle these substances only in a hood whose satisfactory performance has been confirmed, using appropriate protective apparel (especially gloves) to prevent skin contact.

ii. Review each use of these materials with the research supervisor and review continuing uses annually or whenever a procedural change is made.

iii. Store these substances, properly labeled, in an adequately ventilated area in an unbreakable secondary container.

iv. Notify supervisors of all incidents of exposure or spills; consult a qualified physician when appropriate.

3. Work with Chemicals of Moderate Chronic or High Acute Toxicity (Examples: diisopropylfluorophosphate, hydrofluoric acid, hydrogen cyanide).

a. Purpose: To minimize exposure to these toxic substances by any route using all reasonable precautions.

b. Applicability: These precautions are appropriate for substances with moderate chronic or high acute toxicity used in significant quantities.

c. Location: Use and store these substances only in areas of restricted access with special warning signs. Always use a hood (previously evaluated to confirm adequate performance with a face velocity of at least 80 linear feet per minute) or other containment device for procedures which may result in the generation of aerosols or vapors containing the substance; trap released vapors to prevent their discharge with the hood exhaust. If using hood, lower sash to the lowest height feasible for comfortable operation.

d. Personal protection: Always avoid skin contact by use of gloves and long sleeves (and other protective apparel as appropriate). Always wash hands and arms immediately after working with these materials.

e. Records: Maintain records of the amounts of these materials on hand, amounts used, and the names of the workers involved under tab SOP's in the TTUHSC *Laboratory Compliance Manual*.

f. Prevention of spills and accidents: Be prepared for accidents and spills.

i. Assure that at least 2 people are present at all times if a compound in use is highly toxic or of unknown toxicity.

ii. Store breakable containers of these substances in chemically resistant trays; also work and mount apparatus above such trays or cover work and storage surfaces with removable, absorbent, plastic backed paper.

iii. If a major spill occurs outside the hood, evacuate the area; assure that cleanup personnel wear suitable protective apparel and equipment.

g. Waste: Store contaminated waste in closed, suitably labeled, impervious containers. Contact Safety Services for pick up.

4. Work with Chemicals of High Chronic Toxicity (Examples: dimethylmercury and nickel carbonyl, benzo-a-pyrene, N-nitrosodiethylamine, other human carcinogens or substances with high carcinogenic potency in animals).

Further supplemental rules to be followed, in addition to those mentioned above, for work with substances of known high chronic toxicity (in quantities above a few milligrams to a few grams, depending on the substance).

a. Access: Conduct all transfers and work with these substances in a "controlled area": a restricted access hood, glove box, or portion of a lab, designated for use of highly toxic substances, for which all people with access are aware of the substances being used and necessary precautions.

b. Approvals: Prepare a plan for use and disposal of these materials and obtain the approval of the laboratory supervisor and Institutional Biohazards Committee.

c. Non-contamination/Decontamination: Protect vacuum pumps against contamination by scrubbers or HEPA filters and vent them into the hood. Decontaminate vacuum pumps or other contaminated equipment, including glassware, in the hood before removing them from the controlled area. Decontaminate the controlled area before normal work is resumed there.

d. Exiting: On leaving a controlled area, remove any protective apparel (placing it in an appropriate, labeled container) and thoroughly wash hands, forearms, face, and neck.

e. Housekeeping: Use a wet mop or a vacuum cleaner equipped with a HEPA filter instead of dry sweeping if the toxic substance was a dry powder.

f. Medical surveillance: If using toxicologically significant quantities of such a substance on a regular basis (e.g., 3 times per week), consult a qualified physician concerning desirability of regular medical surveillance.

g. Records: Keep accurate records of the amounts of these substances stored and used, the dates of use, and names of users.

h. Signs and labels: Assure that the controlled area is conspicuously marked with warning and restricted access signs and that all containers of these substances are appropriately labeled with identity and warning labels.

i. Spills: Assure that contingency plans, equipment, and materials to minimize exposures of people and property in case of accident are available.

j. Storage: Store containers of these chemicals only in a ventilated, limited access area in appropriately labeled, unbreakable, chemically resistant, secondary containers.

k. Glove boxes: For a negative pressure glove box, ventilation rate must be at least 2 volume changes/hour and pressure at least 0.5 inches of water. For a positive pressure glove box, thoroughly check for leaks before each use. In either case, trap the exit gases or filter them through a HEPA filter and then release them into the hood.

l. Waste: Use chemical decontamination whenever possible; ensure that containers of contaminated waste (including washings from contaminated flasks) are transferred from the controlled area in a secondary container under the supervision of authorized personnel.

5. Animal Work with Chemicals of High Chronic Toxicity

a. Access: For large scale studies, special facilities with restricted access are preferable.

b. Administration of the toxic substance: When possible, administer the substance by injection or gavage instead of in the diet. If administration is in the diet, use a caging system under negative pressure or under laminar air flow directed toward HEPA filters.

c. Aerosol suppression: Devise procedures which minimize formation and dispersal of contaminated aerosols, including those from food, urine, and feces (e.g., use HEPA filtered vacuum equipment for cleaning, moisten contaminated bedding before removal from the cage, mix diets in closed containers in a hood).

d. Personal protection: When working in the animal room, wear plastic or rubber gloves, fully buttoned laboratory coat or jumpsuit and, if needed because of incomplete suppression of aerosols, other apparel and equipment (shoe and head coverings, respirator).

e. Waste disposal: Dispose of contaminated animal tissues and excreta by methods outlined in the TTUHSC *Regulated Waste Disposal Manual*.

This Chemical Hygiene Plan was implemented for the above listed laboratory room numbers on _____ (date) and remains in effect until further notice.

_____

(Signature of Principal Investigator or Laboratory Supervisor)

I have read and understand the above Chemical Hygiene Plan, and agree to follow all appropriate procedures and recommendations.

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
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_____ (Name) _____(Signature)
_____(Title) _____ (Date)

# Exposure Control Plan*
# for

_____ (name of Principal Investigator)

_____ (laboratory room numbers)

_____(contact location/phone number)

**This document must be filled out only for research involving human or human derived materials.**

In this document, “the above listed Principal Investigator” refers to the Principal Investigator listed on this page, “the above listed laboratory room numbers” refers to the laboratory room numbers listed on this page and “the above listed contact location/phone number” refers to the contact location/phone number listed on this page.

*Adapted from OSHA’s Bloodborne Pathogens Standard, OSHA Directives CPL 2-2.44D - Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens 11/05/1999.

**STANDARD**

The above listed Principal Investigator / Laboratory Supervisor is committed to providing a safe and healthful work environment for the entire laboratory staff. In pursuit of this endeavor, the following Exposure Control Plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

This ECP document is used to assist this laboratory in implementing and ensuring compliance with the standard, thereby protecting laboratory personnel. This ECP includes:

- Determination of personnel exposure
- Implementation of various methods of exposure control, including:
  - Standard precautions
  - Engineering and work practice controls
  - Personal protective equipment
  - Housekeeping
- Hepatitis B vaccination
- Post-exposure evaluation and follow-up
- Communication of hazards to personnel
- Training
- Recordkeeping
- Procedures for evaluating circumstances surrounding an exposure incident

The methods of implementation of these elements of the standard are discussed in the subsequent pages of this ECP.

**PROGRAM ADMINISTRATION**

The above listed Principal Investigator is responsible for the implementation of the ECP and will maintain, review, and update the ECP at least annually, and whenever necessary to include new or modified tasks and procedures.

Personnel who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.

The above listed Principal Investigator will maintain and provide all necessary personal protective equipment (PPE), engineering controls (e.g., sharps containers), labels, and red (biohazard) bags as required by the standard and will ensure that adequate supplies of the aforementioned equipment are available in the appropriate sizes.

The above listed Principal Investigator will be responsible for ensuring that all medical actions required are performed and that appropriate personnel health and OSHA records are maintained.

The above listed Principal Investigator will be responsible for training, documentation of training, and making the written ECP available to personnel, OSHA, and Safety Services representatives.

**EMPLOYEE EXPOSURE DETERMINATION**

The following is a list of all job classifications in this laboratory in which **all** personnel have occupational exposure:

| JOB TITLE | LOCATION |
|---|---|
| | |
| | |
| | |
| | |
| | |

The following is a list of job classifications in which **some** personnel in this laboratory have occupational exposure. Included is a list of tasks and procedures, or groups of closely related tasks and procedures, in which occupational exposure may occur for these individuals:

| JOB TITLE | LOCATION | TASK/PROCEDURE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Part-time, temporary, contract personnel and volunteers are covered by the standard. The provisions of the standard will be met for these personnel as described below:

**METHODS OF IMPLEMENTATION AND CONTROL**

Standard precautions

All personnel will utilize standard precautions.

Exposure Control Plan

Personnel covered by the bloodborne pathogens standard receive an explanation of this ECP during initial laboratory orientation training for this laboratory. This ECP will also be reviewed in annual refresher training. All personnel have an opportunity to review this plan at any time during work shifts by contacting the above listed Principal Investigator.

If requested, the above listed Principal Investigator will provide personnel with a copy of the ECP free of charge and within 15 days of the request and is responsible for reviewing and updating the ECP annually or more frequently if necessary to reflect any new or modified tasks and procedures which affect occupational exposure and to reflect new or revised personnel positions with occupational exposure.

Engineering Controls and Work Practices

Engineering controls and work practice controls will be used to prevent or minimize exposure to bloodborne pathogens. The specific engineering controls and work practice controls used are listed below:
(For example: use of blunt cannula instead of needle and syringe)

Sharps disposal containers are inspected and maintained or replaced by (Name of responsible person) whenever $^{2}/_{3}$ – ¾ full to prevent overfilling.

This laboratory identifies the need for changes in engineering control and work practices through (Examples: Review of records, personnel interviews, committee activities, etc.)

Additional needed procedures or new products are evaluated by (Describe the process)

The following staff are involved in this process: (Describe how employees will be involved)

The above listed Principal Investigator will ensure effective implementation of these recommendations.

Personal Protective Equipment (PPE)

PPE is provided to personnel by this laboratory at no cost. Training is provided by the above listed Principal Investigator in the use of the appropriate PPE for the tasks or procedures personnel will perform.

The types of PPE available to personnel are as follows: (Ex., gloves, eye protection, etc.) _____

_____

_____

_____

_____

_____

PPE is located (List location) and may be obtained through

(Name of responsible person)
(Specify how personnel are to obtain PPE, and who is responsible for ensuring that it is available.)

All personnel using PPE must observe the following precautions:

- Wash hands immediately or as soon as feasible after removal of gloves or other PPE.
- Remove PPE after it becomes contaminated, and before leaving the work area.
- Used PPE may be disposed of in the biohazard waste container.
- Wear appropriate gloves when it can be reasonably anticipated that there may be hand contact with blood or OPIM, and when handling or touching contaminated items or surfaces; replace gloves if torn, punctured, contaminated, or if their ability to function as a barrier is compromised.
- Utility gloves may be decontaminated for reuse if glove integrity is not compromised; discard utility gloves if they show signs of cracking, peeling, tearing, puncturing, or deterioration.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eyes, nose, or mouth.

- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the outer surface.

The procedure for handling used PPE is as follows: (For example, how and where to decontaminate face shields, eye protection, etc.)

_____

_____

_____

_____

Housekeeping

**Regulated waste** is placed in containers which are closable or covered, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded (see Labels), and closed prior to removal to prevent spillage or protrusion of contents during handling.

The procedure for handling **sharps disposal containers** is to place sharps container in biohazard bag. When the bag is ¾ full, tie the bag off and housekeeping will pick it up during evening rounds. If the bag is not tied off, housekeeping will NOT pick it up. If housekeeping fails to pick up biohazard waste, contact Safety Services for appropriate disposal.

The procedure for handling **other regulated waste** is to dispose of in biohazard waste container. Tie the bag off and housekeeping will pick it up during their evening rounds. If the bag is not tied off, housekeeping will NOT pick it up. If housekeeping fails to pick up biohazard waste, then contact Safety Services for appropriate disposal.

**Contaminated sharps** are discarded immediately or as soon as possible in containers that are closable or covered, puncture-resistant, leak proof on sides and bottoms, and labeled or color-coded appropriately.

Sharps disposal containers are available at (must be easily accessible and as close as feasible to the immediate area where sharps are used).

**Broken glassware** which may be contaminated is picked up using mechanical means, such as a brush and dust pan or tongs and placed in container specifically designated for broken glass.

Laundry

Laboratory coats will be laundered by contract service with TTUHSC for faculty, staff, and other employees. Students must have lab coats autoclaved prior to the lab coats leaving the building. This ensures the lab coat has been decontaminated and is safe to take home and wash in bleach. If the student is working with radioactive materials, the lab coat must be surveyed for radioactive contamination prior to leaving the premises. The lab coat must be disposed of if radioactive contamination is present. PPE not autoclaved may not leave the building due the hazards that it may present to an unknowing public.

Laundering will be performed as specified in contract with outside vendor.

The following laundering requirements must be met if not using TTUHSC contract service:

- Handle contaminated laundry as little as possible, with minimal agitation.
- Place wet contaminated laundry in leak-proof, labeled or color-coded containers before transport.

Labels

The following labeling method(s) is used in this facility:

| EQUIPMENT TO BE LABELED<br>(e.g., specimens, work locations, refrigerators, etc.) | LABEL TYPE (size, color, etc.)<br>( red bag, biohazard label, color code, etc.) |
|---|---|

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(Name of responsible person) will ensure warning labels are affixed or red bags are used as required if regulated waste or contaminated equipment is brought into the facility.

Employees are to notify the above listed responsible person if they discover regulated waste containers, refrigerators containing blood or OPIM, contaminated equipment, etc. without proper labels.

**HEPATITIS B VACCINATION**

The head nurse of Employee Health / Infection Control will provide training to employees on hepatitis B vaccinations, addressing the safety, benefits, efficacy, methods of administration, and availability.

The hepatitis B vaccination series is available at no cost after training and within 10 days of initial assignment to employees identified in the exposure determination section of this plan. Vaccination is encouraged unless: 1) documentation exists that the employee has previously received the series, 2) antibody testing reveals that the employee is immune, or 3) medical evaluation shows that vaccination is contraindicated.

However, if an employee chooses to decline vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at no cost. Documentation of refusal of the vaccination is kept at the office of the head nurse of Employee Health / Infection Control.

Vaccination will be provided at a location specified by the head nurse of Employee Health / Infection Control. Following hepatitis B vaccinations, the health care professional's Written Opinion will be limited to whether the employee requires the hepatitis vaccine, and whether the vaccine was administered.

**POST-EXPOSURE EVALUATION AND FOLLOW-UP**

Should an exposure incident occur, contact the head nurse of Employee Health / Infection Control for Lubbock (806)743-1629, El Paso (915)545-6501, Amarillo (806)354-5555 ext. 242, and in Odessa (432)335-5158.

An immediately available confidential medical evaluation and follow-up will be conducted by the head nurse of Employee Health/Infection Control, and the Safety Services Office.

Following the initial first aid (clean the wound, flush eyes or other mucous membrane, etc.), the following activities will be performed:

- Document the routes of exposure and how the exposure occurred.
- Identify and document the source individual (unless the supervisor can establish that identification is infeasible or prohibited by state or local law).
- Obtain consent and make arrangements to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's health care provider.
- If the source individual is already known to be HIV, HCV and/or HBV positive, new testing need not be performed.

- Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws and regulations concerning the identity and infectious status of the source individual (e.g., laws protecting confidentiality).

- After obtaining consent, collect exposed employee's blood as soon as feasible after exposure incident, and test blood for HBV and HIV serological status

- If the employee does not give consent for HIV serological testing during collection of blood for baseline testing, preserve the baseline blood sample for at least 90 days; if the exposed employee elects to have the baseline sample tested during this waiting period, perform testing as soon as feasible.

**ADMINISTRATION OF POST-EXPOSURE EVALUATION AND FOLLOW-UP**

The head nurse of Employee Health / Infection Control ensures that health care professional(s) responsible for employee's hepatitis B vaccination and post-exposure evaluation and follow-up are given a copy of OSHA's bloodborne pathogens standard. The head nurse of Employee Health / Infection Control also ensures that the health care professional evaluating an employee after an exposure incident receives the following:

- A description of the employee's job duties relevant to the exposure incident

- Route(s) of exposure

- Circumstances of exposure

- If possible, results of the source individual's blood test

- Relevant employee medical records, including vaccination status

The head nurse of Employee Health / Infection Control also provides the employee with a copy of the evaluating health care professional's written opinion within 15 days after completion of the evaluation.

**PROCEDURES FOR EVALUATING THE CIRCUMSTANCES SURROUNDING AN EXPOSURE INCIDENT**

The above listed Principal Investigator will review the circumstances of all exposure incidents to determine:

- Engineering controls in use at the time of exposure.

- Were the appropriate work practices followed?

- A description of the device being used.

- Protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, lab coats, etc.).

- Location of the incident (Laboratory, O.R., E.R., patient room, etc.).

- Procedure being performed when the incident occurred.

- Employee’s training.

If it is determined that revisions need to be made, the above listed Principal Investigator will ensure that appropriate changes are made to this ECP. (Changes may include an evaluation of safer devices, adding employees to the exposure determination list, etc.)

**EMPLOYEE TRAINING**

All employees who have potential occupational exposure to bloodborne pathogens receive training conducted by Safety Services and the above listed Principal Investigator.

All employees who have potential occupational exposure to bloodborne pathogens receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases. In addition, the training program covers, at a minimum, the following elements:

- A copy and explanation of the standard.
- An explanation of the ECP and how to obtain a copy.
- An explanation of the methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident.
- An explanation of the use and limitations of engineering controls, work practices, and PPE.
- An explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE.
- An explanation of the basis for PPE selection.
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information of the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
- An explanation of the signs and labels and/or color coding required by the standard and used at this facility.
- An opportunity for interactive questions and answers with the person conducting the training session.

Training materials for this laboratory are available at the above listed laboratory, the head nurse of Employee Health / Infection Control's office and the Department of Safety Services.

**RECORDKEEPING**

Training Records

Upon completion of training, records will be maintained for a period of at least three years by the Department of Safety Services, Division of Safety Education and Training

The training records include:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of all persons attending the training sessions.

Employee training records are provided upon request to the employee or the employee's authorized representative within 15 working days. Such requests should be addressed to the TTUHSC Department of Safety Services, Division of Safety Education and Training

Medical Records

Medical records are maintained for each employee with occupational exposure in accordance with 29 CFR 1910.20, "Access to Employee Exposure and Medical Records."

The head nurse of Employee Health / Infection Control is responsible for maintenance of the required medical records. These confidential records are kept at a location specified by the above nurse for at least the duration of employment plus 30 years.

Employee medical records are provided upon request of the employee or to anyone having written consent of the employee within 15 working days. Such requests should be sent to the head nurse of Employee Health / Infection Control.

**HEPATITIS B VACCINE DECLINATION (MANDATORY)**

I understand that due to my potential occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to me. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Printed Name:

Signed:(Employee Name)_____

Date:

This Exposure Control Plan was implemented for the above listed laboratory room numbers on (date) and remains in effect until further notice.

_____ _____

(Printed Name of Principal Investigator) (Signature of Principal Investigator)

I have read and understand the above Exposure Control Plan, and agree to follow all appropriate procedures and recommendations.

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
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_____(Title) _____ (Date)

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

# Hazard Communication Plan*
# for

_____(name of Principal Investigator)

_____(laboratory room numbers)

In this document, “the above listed Principal Investigator” refers to the Principal Investigator listed on this page and “the above listed laboratory room numbers” refers to the laboratory room numbers listed on this page.

*Adapted from OSHA’s Hazard Communication Standard

# Table of Contents

# I. Policy Statement:

As the supervisor of this laboratory I am committed to protecting laboratory personnel by assuring that:

(1) The work environment is free from recognized hazards that could cause injury, illness or death.
(2) Safety and Health factors have priority when in competition with economic factors.
(3) Contact information for professional expertise is available to staff to maintain and support the Safety and Health of the Texas Tech University Health Sciences Center.
(4) Each employee is accountable for the safety performance of his/her activity and that this performance is measured regularly against the goal of zero (0) accidents and losses.
(5) Each employee is trained and educated in safety procedures and performs the work in compliance with these safety measures.
(6) The work environment is monitored on a regular basis to assure a safe and healthy workplace.
(7) Each employee assumes personal responsibility for the development and support of a safe workplace.

_____

(Principal Investigator or Laboratory Supervisor's signature)

# II. Hazard Communication Plan

## A. Purpose:

The Hazard Communication Standard emphasizes identification and communication of the presence of hazardous substances in the products and processes used in the work environment of the Texas Tech University Health Sciences Center.

## B. Responsibilities:

This Hazard communication plan has been adapted specifically for the above listed Principal Investigator working in the above listed laboratory room numbers. This program meets the requirements of the Hazard Communication Standard in the areas of:

- Hazard Evaluation
- Labels and Warnings
- Material Safety Data Sheets (MSDS)
- Employee Information and Training.

This written program is posted in the above listed Principal Investigator's *Laboratory Compliance Manual*. Copies of the written program are available from _____ (name or title) _____ (location) for review by any interested party.

## C. Procedures:

### 1. Container Labeling:

(a) The above listed Principal Investigator or Laboratory Supervisor will verify that all containers received for use within the above listed laboratory room numbers will:

- Be clearly labeled as to the contents.
- Note the appropriate hazard warning, and
- Forward any MSDS received to _____ (position or name)

(b) The supervisor in the above listed laboratory room numbers will ensure that all secondary containers are labeled with the name of the chemical as it appears on the MSDS.

(c) _____ (position or name) is responsible for the labeling of all in-lab containers. He/She will assist any other members of the laboratory with labeling. The above listed position or name is also responsible for reviewing and updating the labeling when required. This review will be conducted every six months.

### 2. Material Safety Data Sheets (MSDS)

(a) _____(position or name) is responsible for maintaining the MSDS system for this laboratory. He/She will review incoming material safety data sheets for new and/or changes in significant health safety information. This new or significant information will be disseminated to all laboratory employees.

(b) The person listed in 2.(a) will be responsible for adding a SIRI MSDS Index shortcut (a MSDS database link on TTUHSC safety services web-site) to all laboratory employees' computer desktops.

(c) The person listed in 2.(a) will also assemble a master file of all MSDS's received by the laboratory for materials used in this laboratory. Any employee may review the master file of MSDS's by contacting the person listed in 2.(a).

(d) The person listed in 2.(a) will also post the TTUHSC Bio-hazardous Materials License in a common area where all laboratory employees will have access to the information. This license will list all certified personnel as well as all highly hazardous materials registered with the TTUHSC Institutional Bio-safety Committee (IBC).

### 3. New Employee Orientation

The Safety Education and Training Division of TTUHSC Safety Services is responsible for assuring that:

(a) The Notice to Employees required by the Hazard Communication Act is posted in an area that all members of this laboratory have access to.

(b) An explanation of the program is included in the new employee orientation. The orientation will include:

- An overview of the requirements of the program.

- Informing the new employee of the safety training requirements for laboratory employees.

## 4. Employee Training

The Laboratory Safety Division of TTUHSC Safety Services is responsible for the development and presentation of training and education programs to the members of this laboratory that:

- Provide general awareness of the Hazard Communications Standard.
- Review general chemical safety information
- Review proper use of personal protective equipment
- Develop employee skills for emergency handling of hazardous substances that are released or spilled
- Show how to read labels and MSDS's to obtain appropriate hazard information, and
- Be utilized as a resource for further questions about chemical handling and storage.

## 5. Specific hazards

The above listed Principal Investigator or Laboratory Supervisor is responsible for providing information about any hazardous chemicals an employee may be exposed to. This information will include:

(1) Information on interpreting labels and MSDSs and the relationship between those two methods of hazard communication.

(2) The location by work area, acute and chronic effects, and safe handling of hazardous chemicals known to be present in the employees' work area and to which the employee may be exposed.

(3) The proper use of protective equipment and first aid treatment to be used with respect to the hazardous chemicals to which the employees may be exposed.

(4) General safety instructions on the handling, cleanup procedures, and disposal of hazardous materials.

## 6. Annual Chemical Inventory

The above listed Principle Investigator or Laboratory Supervisor is responsible for providing and maintaining a chemical inventory for the above-listed laboratory room numbers. The inventory will include at a minimum:

- All chemicals in the lab, including name and physical state (solid, liquid).
- All biologicals in the lab, including the biological safety level (BSL).

Initial inventory submissions may be done in Excel files, whereas maintenance must be done via the on-line EH&S program located at http://www.ttuhsc.edu/admin/safety/chemlist .

## 7. Informing Temporary Help and Volunteers

Temporary help and volunteers will be treated as a new employee and must be provided all of the orientation and training required of a new employee placed in a laboratory at TTUHSC.

This Hazard Communication Plan was implemented for the above listed laboratory room numbers on _____ (date) and remains in effect until further notice.

_____
(Signature of Principal Investigator or Laboratory Supervisor)

I have read the above Hazard Communication Plan, understand it and agree to follow all appropriate procedures and recommendations.

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

_____ (Name) _____(Signature)
_____(Title) _____ (Date)

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TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER
Safety Services™

Divisions: Education & Training, Environmental, Fire & Life Safety, Laboratory, Occupational, Radiation

# MEMORANDUM

**TO:** All TTU Health Sciences Center research laboratory employees

**FROM:** Toni Denison, Manager, Laboratory Safety

**DATE:** November 8, 2010

**RE**: Shipping hazardous or infectious materials

Shipments of hazardous materials are regulated by the United States Department of Transportation (DOT), and the International Air Transport Association (IATA) in order to promote safe and secure transportation of hazardous materials and to minimize threats to life, property, and the environment.

Any employee of TTUHSC who ships hazardous items **must first be trained and certified** in the applicable rules. The Department of Safety Services offers and coordinates training classes for TTUHSC hazmat employees. A hazmat employee is any employee who handles, offers for transport, transports, or causes hazardous materials to be transported.

How do you know if your shipment is considered hazardous? For chemicals, this information is found in the MSDS, for biological material, you can refer to the attached flow chart. In all cases there is a certain amount of professional judgment involved and **if you are ever unsure, please contact Safety Services** for help in determining the status.

Due to the clinical nature of the majority of regulated shipments from TTUHSC, multiple training programs will be maintained so that employees may focus their certification to the types of shipments that apply to them. Each program requires initial training, followed by recurrent refresher training every two years.

Contact Safety Services for assistance in determining the best program for your needs. You may also consult the following Safety website for additional information:
http://www.ttuhsc.edu/admin/safety/Hazmatinfo.aspx

If you have received a shipping certification from another entity, please forward a copy of your certificate to Laboratory Safety at the Lubbock HSC, Mail Stop 9020.