

# CHEMICAL HYGIENE PLAN

July 26, 2011

*Updated September 29, 2014*

## **Emergency Procedures**

Response to emergency situations must be conducted in an effective, timely manner to preserve life and property. Information on emergency response can be found at the following link <http://www.lsuhsu.edu/emergencypreparedness/>

Contact University Police at 504 568-8999 in the event of an emergency.

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## INTRODUCTION

The Chemical Hygiene Plan (CHP) is required by Occupational Health and Safety Administration (OSHA) regulation [29 CFR 1910.1450, Occupational Exposures to Hazardous Chemicals in the Laboratory](#), commonly referred to as the “Laboratory Standard.” Furthermore, elements of the plan are required by the state of Louisiana’s Office of Risk Management.

The CHP provides guidance on the safe and proper use, handling and storage of hazardous chemicals in laboratories necessary to protect personnel from potential health and physical hazards and keep chemical exposures below specified limits.

Laboratory workers must be aware and understand all elements of the CHP. New employees should review the CHP and receive appropriate safety training before beginning work with hazardous chemicals. The CHP must be available to all laboratory workers at all times.

## RESPONSIBILITIES

### **Environmental Health and Safety (EHS)**

EHS is responsible to provide technical information and program support to assist Principal Investigators and Lab Supervisors in complying with the [Laboratory Standard](#). EHS will maintain the CHP. Specific responsibilities include:

- Provide safety training that is not site-specific.
- Provide technical assistance with the proper handling, storage and safe disposal of hazardous chemicals.
- Conduct exposure assessments and evaluate exposure control measures as necessary.
- Maintain employee exposure records.
- Conduct laboratory safety inspections per [EHS 400.13, Laboratory Inspection Program](#) guidelines.
- Emergency response for large chemical spills.

### **Chemical Hygiene Officer (CHO)**

The CHO is responsible to provide guidance for complying with the CHP. Specific responsibilities include:

- Assist laboratory personnel with development of lab-specific chemical hygiene procedures and practices.
- Monitor use and disposal of chemicals used in the lab.
- Maintain current knowledge concerning the legal requirements of regulated substances in the laboratory.
- Participate in investigation of serious accidents involving hazardous chemicals.

### **Supervisor/Principal Investigators (PIs)**

The Supervisor/PI has primary responsibility for CHP compliance in his/her laboratory. These responsibilities include:

- Ensure laboratory workers are familiar with the location and contents of the CHP.
- Identify hazardous conditions or operations in the lab, determine safe procedures and controls, and implement and enforce standard safety procedures.

- Ensure personnel are trained on specific chemical hazards present in the lab and documentation of this training is maintained.
- Maintain the on-line laboratory chemical inventory and Safety Data Sheets (SDS).
- Ensure that [personal protective equipment \(PPE\)](#) is available.
- Complete standard operating procedures (SOPs) in accordance with this policy.

## **Employees**

Employees are responsible for applying sound chemical hygiene practices as outlined in the CHP. These responsibilities include:

- Complete initial laboratory safety training via Knowledge Deliver System (KDS) and all laboratory-specific training before beginning any chemical work.
- Follow the use and handling procedures listed on chemical labels and in Safety Data Sheets (SDS).
- Follow the CHP and any lab-specific standard operating procedures.
- Use the proper personal protective equipment.
- Promptly report accidents and unsafe conditions to the Laboratory Supervisor/PI per [EHS 400.06, Incident/Accident Reporting and Investigation Policy](#).
- Know where the chemical spill kit, fire extinguishers, emergency showers and eye wash stations are located and how to use them.

## **TRAINING**

### **General Training**

All newly hired laboratory personnel are required to take General Safety and Laboratory Safety training via the [Knowledge Delivery System](#). Hazard communication is included in each of these training modules.

### **Laboratory Specific Training**

All laboratory personnel are to receive laboratory-specific training at the time of initial assignment and a minimum of annually thereafter. Training is also required prior to assignments involving exposure to new or additional hazards or potential hazards, or when safety performance is unsatisfactory. Supervisors/PIs are responsible to provide laboratory-specific training to their lab personnel to address the specific chemical hazards present and emergency procedures specific to the laboratory. Training must be documented (see Appendix A, Documentation of Training Form) and should include:

- Contents of the [Laboratory Standard and its appendices](#).
- Contents and location of the CHP.
- Review of any standard operating procedures involving hazardous chemicals.
- Exposure limits for hazardous chemicals used in the lab.
- Signs and symptoms associated with chemical exposure of chemicals used in the lab.
- The location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including, but not limited to, Safety Data Sheets provided by the chemical supplier
- How to read and interpret SDS.

- Methods to detect the presence or release of chemicals.
- Physical properties and health hazards of chemicals used in the laboratory.
- Measures that laboratory personnel can take to protect themselves from chemical hazards.
- Procedures for emergency response and spill control.

## **LABORATORY SECURITY**

To minimize the probability of theft and chemical exposure to an untrained visitor, it is important that the laboratory remain secure at all times. In general, all laboratories should:

- Close and lock laboratory doors when no one is present.
- Do not leave hazardous materials unattended at any time when not secured.
- Restrict access to the laboratory to authorized personnel only.
- Report any missing inventory to the Laboratory Supervisor/PI.
- Prohibit the use of lab space, materials and equipment without the knowledge and approval of the lab supervisor or PI.
- Maintain the [on-line chemical and biological inventories](#).
- Maintain an equipment inventory.

## **HAZARD COMMUNICATION**

### **Door Signs and Labels for Chemicals**

All laboratories are required to have door signs. Signs on laboratory doors are used to communicate the hazards associated with a laboratory to workers or visitors before they enter the laboratory. Door signs also communicate who to contact in the event of an emergency. Labels are a primary source of information concerning identification, hazards, and storage requirements of a hazardous material. For more information on door signage, manufacturer's labels, and secondary container labels, see [EHS 400.12, Hazard Communication Program](#).

### **Chemical Inventory**

Maintaining an accurate inventory of the chemicals present ensures that first responders to chemical incidents are aware of potential hazards in the laboratory. LSUHSC uses the On Site Chemical Safety Assistant program which is a web-based inventory database used to manage chemical data, generate reports, and provide online training. The On Site program allows PIs/Supervisors to access and monitor their own chemical inventory. The inventory should be updated when a chemical is added, no longer used, or when there is a significant change in the quantity of any chemical. For more information, see [EHS 200.07, Chemical Inventory and Control Policy](#)

### **Safety Data Sheets (SDS)**

[OSHA 29 CFR 1910.1200, Hazardous Communication Program](#), requires that SDS be available to all employees for each hazardous chemical used in their work area. Safety Data Sheets were previously known as Material Safety Data Sheets (MSDS), and either one may appear on LSUHSC campus. A SDS summarizes information about the chemical, including chemical components; hazard identification; first aid, spill response, and fire fighting measures; incompatibilities; safe handling and storage requirements; and disposal guidelines.

Laboratory supervisors/PIs shall ensure copies of SDS for all hazardous chemicals in their laboratories are available either in hardcopy or on a computer hard drive. To obtain a SDS, contact the chemical manufacturer, chemical supplier or distributor; or reference numerous [web sites](#). For more information about SDS and the LSUHSC Hazardous Communication Program, see [EHS 400.12, Hazard Communication Program](#).

## **GENERAL PRINCIPLES FOR WORKING WITH LABORATORY CHEMICALS**

### **Minimize Chemical Exposures**

Since few laboratory chemicals are without hazards, general precautions for chemical handling, storage, and disposal should be implemented in all laboratories. Use of less hazardous materials, implementation of engineering controls whenever feasible, and use of personal protective equipment to avoid exposure to chemicals is encouraged.

### **Perform a Hazard Assessment**

Prior to starting new procedures, an initial assessment of potential hazards must be performed by the Supervisor/Principal Investigator. This shall include, but is not limited to, review of data from monitoring of similar operations; SDS reviews; procedure reviews; consideration of the potential for skin and eye contact; and reports of unusual odors, irritations, or other signs or symptoms of potential exposures. Where the initial assessment indicates that there is a reasonable potential for a health and/or safety hazard, the EHS department shall be contacted to perform a formal health hazard evaluation (HHE) to evaluate and document employee exposures to hazardous materials or physical agents. When the HHE identifies that a hazard exists, recommendations for the implementation of the appropriate protective measures, including engineering/administrative controls and/or personal protective equipment, will be identified. Subsequent to the completion of a HHE that has identified a hazard and recommended the implementation of exposure control measures, the laboratory should develop laboratory-specific standard operating procedures that incorporate the necessary and appropriate use of hazard controls and work practices.

### **Exposure Monitoring**

Regular environmental monitoring is not usually warranted in labs because chemicals are typically used for relatively short time periods and in small quantities. However, exposure monitoring as part of an HHE or required by [29 CFR 1910.1450](#) may be provided when:

- Hazardous chemicals are used in quantities and for frequencies and durations of significance.
- Highly toxic chemicals with low threshold exposure limits are used.
- When regular use of an OSHA regulated substance creates exposures potentially in excess of an action level (AL) or permissible exposure limits (PEL). AL and PELs for OSHA regulated substances can be found in [29 CFR 1910.1000, Toxic and Hazardous Substances](#).
- When laboratory personnel exhibit signs and symptoms of exposure to chemicals used or stored in their areas.

### **Special Precautions When Working with High Hazard Materials**

Special precautions should be taken when performing laboratory work with any of the following chemical categories: carcinogens, reproductive toxins, substances that have a high degree of toxicity, or chemicals whose toxic properties are unknown. These chemicals are considered to be high-risk materials and are treated as high hazard chemicals. An initial hazard assessment shall be performed prior to working with all high hazard chemicals. Additional provisions for working with high hazard chemicals are described in [EHS 200.09, High Hazard Chemical Policy](#).

### **Standard Operating Procedures (SOPs)**

SOPs contain the practices and procedures required to protect the employee's health and safety when working with hazardous chemicals used in the laboratory. They provide specific instructions in the correct way to perform a given task.

- Supervisors/PIs are responsible for reviewing all materials and substances being used in the laboratory.
- Upon the determination that hazardous chemicals will be used, the supervisor/PI is responsible for developing and effectively implementing site-specific SOPs for the safe handling of all hazardous chemicals in their laboratory.
- SOPs may be developed according to a process or procedure, to classes of hazardous chemicals, or to individual hazardous chemicals.
- The results and recommendations of an HHE shall be incorporated into all applicable SOPs.
- There is no specific format required, but SOPs should include the following information:
  - Procedure or process: List the procedures or processes that will include the use of the hazardous chemicals.
  - Hazardous chemicals: List the hazards associated with the chemicals.
  - Training requirements of laboratory personnel.
  - PPE: List the PPE required to be worn during the procedure.
  - Engineering Controls: List the use of equipment (e.g., fume hood, glove boxes, ventilation requirements, shields) required to minimize exposure.
  - Emergency equipment: List the equipment and its location that may be needed in case of an emergency.
  - Transporting and storage requirements of chemicals used: Describe specific, safe handling and storage requirements.
  - Accident, spill control and decontamination procedures: Describe specific procedures to be followed in case of an exposure, spill and the cleanup of a contaminated area.
  - Waste disposal procedures: Describe specific procedures on how waste is prepared and packaged for disposal
  - Medical surveillance or monitoring of personnel if required: Describe the medical surveillance or monitoring that is needed.
  - When using a high hazard chemical, describe the designated work area(s) where the chemical shall be used.

SOPs can be developed using Appendix A, Laboratory-Specific Standard Operating Procedures Form. A completed sample SOP is included with the form. An alternative to using the SOP format is to conduct a job safety analysis (JSA) on applicable jobs/tasks using Appendix B, the State of Louisiana Form JSA-100. A JSA is a systematic method of identifying hazards and control measures to safely perform a specific job or task. For more information on JSAs, see [EHS 400.04, Job Safety Analysis Policy](#).



## **Standard Laboratory Work Practices**

All laboratory employees should be alert for unsafe practice and conditions in the laboratory and should immediately report such practices and/or conditions to the laboratory supervisor/PI. The supervisor/PI should correct unsafe practices and/or conditions immediately. The following are some basic tips that should be followed while working in the laboratory:

- Eating, drinking, chewing gum, smoking, applying cosmetics and taking medication are prohibited in the laboratory. Rules and See [EHS Laboratory Safety page](#).
- Do not smell or taste any chemicals
- Avoid unnecessary exposure to all chemicals by any route
- Laboratory equipment is to be used only for its intended purpose
- Pipe bulbs or other appropriate equipment should be used to pipette chemicals. Pipetting of chemicals should never be done by mouth.
- Hands should be washed after working with chemicals, even when gloves have been used. Lab refrigerators and chemical storage areas should never be used to store food or beverages.
- Laboratory water sources should not be used for drinking water
- Appropriate laboratory attire is described on the [EHS Laboratory Safety page](#)
- Avoid working alone in the laboratory. When working alone in the laboratory arrange for periodic checks by personnel in adjacent laboratories or office areas.

## **LABORATORY FACILITY DESIGN, MAINTENANCE, AND USAGE**

The engineering controls installed in the laboratory are intended to minimize employee exposure to chemical and physical hazards in the workplace. These controls must be maintained in proper working order for this goal to be realized. When designing a laboratory, be sure to address:

- An appropriate general ventilation system with air intakes and exhausts located so as to avoid contaminated air.
- Adequate, well-ventilated stockroom/storerooms.
- Laboratory hood and sinks.
- Other safety equipment including emergency safety shower and eyewash stations.

Routine maintenance is essential to maintaining a safe laboratory. All maintenance functions, both routine and non-routine, are handled by the Property and Facilities Department. Work requests should be submitted via the on-line work request system [bob.lsuhsu.edu](http://bob.lsuhsu.edu).

## **LABORATORY VENTILATION**

### **General Laboratory Ventilation**

Laboratories should have general ventilation adequate for employee comfort and sufficient to supply air for chemical fume hoods and other local ventilation devices.

- Except for special circumstances, air in laboratories should be under negative pressure with respect to the rest of the building; this helps to prevent odors and vapors from leaving the laboratory area.
- Direct air flow into the laboratory should come from non-laboratory areas and the air flow should be exhausted to the exterior of the building.
- Laboratory air should be continually replaced, preventing an increase of air concentrations of toxic materials during the length of the work day.

- General ventilation should not be relied on for protection from toxic and hazardous substances. Local ventilation devices such as chemical fume hoods and glove boxes are designed to reduce the exposure of laboratory workers to hazardous substances.

### **Laboratory Chemical Fume Hoods**

Local exhaust ventilation is one of the engineering methods available to reduce the risk of a health hazard associated with the use of hazardous chemicals in the laboratory. Laboratory chemical fume hoods are the most common local exhaust found in the laboratory.

- The hood prevents hazardous vapors and dusts from mixing with the general room air.
- Air from the room enters the front of the hood and exhausts through the back and top of the hood.
- While working in the chemical fume hood with the sash lowered to an appropriate working level, the hood can also provide some protection from chemical splashes, sprays, fires, and minor explosions.
- The proper working height for the sash is identified by a certification sticker on the side of the face opening.
- If a chemical fume hood is not operating properly, or if it is not used properly, the airflow will be insufficient to capture and remove hazardous vapors and particulates, reducing the protection factor of the chemical fume hood.
- EHS certifies fume hoods annually in accordance with ANSI/AIHA Z9.5-2003, American National Standard Laboratory Ventilation Guidelines.

### **Ductless Chemical Fume Hoods**

Ductless fume hoods re-circulate exhaust air through filters back into the room; these type hoods shall not be used when working with volatile toxic materials. If the use of ductless fume hoods is necessary, a schedule for changing filters shall be available.

### **Biological Safety Cabinet**

The exhaust air from a biological safety cabinet passes through scrubbers, HEPA filters, or other treatment before they release into the regular exhaust system. Biological safety cabinets must be re-certified annually and each time they are moved.

### **Glove Box (Negative and Positive Pressure Units)**

Negative pressure glove boxes and glove bags are isolation units used when handling highly toxic chemicals, carcinogens, and biological select agents. Positive pressure units are used when protection from atmospheric moisture or oxygen is required. Since the potential hazard of leakage into the laboratory exists with a positive pressure unit, toxic chemicals should not be used. These units must be regularly tested for leaks and must have a shutoff valve and pressure gauge installed.

### **“Cold” or “Warm” Rooms**

Temperature control rooms do not generally have fresh air ventilation; the air is re-circulated. Never use highly volatile hazardous chemicals in these “cold” or “warm” rooms; hazardous chemical concentrations can increase over time. Also, never store liquid nitrogen in cold rooms; a possible displacement of oxygen with the nitrogen could cause an oxygen-deficient atmosphere.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

PPE shall be used as a final means of barrier protection against hazards. The PPE shall be fit to the individual and be specific for the hazard. Employees must be trained in the use and selection of PPE before using the PPE. For more information on PPE, see [EHS 400.03, Personal Protective Equipment Policy](#).

### **Gloves**

Care should be taken to ensure that the gloves chosen for a specific application are suitable. In order to make an informed decision regarding the type of glove to use to provide adequate protection, a SDSs and/or a manufacturer's glove compatibility chart should be consulted to ensure that the gloves that are worn would protect the wearer. Two glove compatibility links:

- [Laboratory Glove Selection Guideline – U.S. Department of Energy](#)
- [Laboratory Chemical Resistance Glove Guide - Ansell](#)

### **Respirators:**

OSHA regulation [29 CFR 1910.134, Respiratory Protection](#), requires that all personnel required to wear a respirator must be assisted with the proper selection of a respirator and receive a medical evaluation, fit testing, and training before a respirator can be worn. When respirator use is required to maintain exposure levels below permissible limits or short term exposure limits, the EHS Department will provide guidance on the selection and use of the respirator. For more information on respirators, see [EHS 200.08, Respiratory Protection Program](#).

## **MEDICAL CONSULTATION AND MEDICAL EXAMINATIONS**

Employees shall be provided an opportunity to receive appropriate medical support in association with the following:

- The employee develops signs or symptoms associated with a hazardous chemical to which they may have been exposed in the laboratory
- Exposure monitoring reveals an exposure level routinely above the action level of the PEL for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements (medical surveillance shall be established for the affected employee as prescribed by the standard for the particular substance)
- A spill, leak, explosion or other occurrence takes place, resulting in the likelihood of a hazardous exposure

The following information shall be provided to the physician:

- identity of the hazardous chemical(s) to which the employee may have been exposed
- the results of an exposure assessment, as available
- a description of the conditions under which the exposure occurred
- a description of the signs and symptoms of exposure that the employee is experiencing

A written opinion shall be obtained from the examining physician and include the following:

- any recommendation for further medical follow-up
- the results of the medical examination and any associated tests

- any medical condition which may be revealed in the course of the examination which may place the employee at increased risk as a result of exposure to a hazardous chemical found in the laboratory
- a statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment

All medical examinations and consultations shall be performed by or under the direct supervision of a licensed physician and shall be provided without cost to the employee and at a reasonable time and place.

## **BASIC LABORATORY SAFETY EQUIPMENT**

### **Fire Extinguishers**

Type ABC fire extinguishers are provided in or near each laboratory. EHS checks fire extinguishers monthly for proper pressure and hose integrity and an annual maintenance check is performed on all pressure dry chemical portable extinguishers.

### **Safety Showers and Eye Wash Stations**

Emergency safety showers are used to drench the body in water to remove any hazardous material contamination. Emergency eye wash stations are used to remove hazardous material contamination from the eyes and/or face. All laboratory employees should know the location of the nearest safety shower/eyewash station and how they function. EHS performs safety shower inspections biannually. For more information on safety showers and eyewash stations, see [EHS 400.08, Emergency Shower and Eyewash Policy](#).

### **Chemical Spill Kits**

EHS provides basic spill kits to all laboratories, chemical storage areas, and other areas where significant quantities of chemicals are used or stored. A basic chemical spill kit contains absorbent pads, absorbent spill pillows, nitrile gloves, safety glasses and instructions on what to do in case of a chemical spill. For more information on chemical spills, see [EHS 200.02, Chemical Spill Response Procedures](#)

## **GENERAL HOUSEKEEPING**

A clean, well-maintained work area is a key contributor to safety. The following are some basic tips for maintaining good housekeeping in the laboratory:

- A routine cleaning schedule should be established for the work area.
- Work surfaces should be kept as clean as possible, with only those items needed for the immediate project.
- Clean all working surfaces at the end of each day.
- All apparatus(s) should be thoroughly cleaned and returned to storage upon completion of usage.
- Keep floors clean and free of tripping hazards.
- Chemical containers should be clean, properly labeled and returned to storage upon completion of usage.

- Store only the amount of chemicals needed.
- Properly dispose of chemicals that have reached their expiration date.
- Keep stairways, hallways, passageways/aisles and access to emergency exits clear.
- Do not block access to the fire extinguisher(s), emergency safety shower, and eyewash.
- Do not allow combustible material such as paper, cardboard boxes, or pallets to accumulate
- Do not let material accumulate in laboratory hoods. The safety of this workspace and the ventilation provided is compromised when excessive chemicals and equipment are kept in the hood.
- Do not over fill collection receptacles.

## **LABORATORY EQUIPMENT AND GLASSWARE**

At the completion of each work day or operation, the work area shall be thoroughly cleaned and equipment properly stored. In addition, the following procedures shall apply to the use of laboratory equipment and glassware:

- All laboratory equipment shall be used only for its intended purpose
- All glassware shall be handled and stored with care to minimize breakage
- All broken glassware shall be immediately disposed of in an appropriately labeled broken glass container constructed with corrugated cardboard or other puncture-resistant material
- All evacuated glass apparatus shall be shielded to contain chemicals and glass fragments in the event of an explosion
- All laboratory equipment shall be inspected by the user on a periodic basis for safety defects, and replaced or repaired as necessary

## **CHEMICAL ORDERING AND STORAGE**

The improper storage and handling of chemicals can result in a fire, explosion, or personal injury. [EHS 200.05, Chemical Ordering and Storage Procedures](#), provides general guidance for the ordering and proper storage of chemicals. More specific storage instructions on chemicals may be obtained from Safety Data Sheets (SDS), container labels, and chemical reference books.

## **COMPRESSED AND LIQUEFIED GAS CYLINDERS**

Compressed and liquefied gases can present a variety of hazards due to their pressure and/or contents. Depending on the particular type of compressed or liquefied gas, there is a potential for simultaneous exposure to the following types of hazards:

- Decompression
- Flammability and explosion
- Asphyxiation
- Toxicity
- Cryohazard
- Physical hazard (weight)

[EHS 200.03a, Compressed Gas Policy](#) provides general guidance for the receipt, storage and transport of compressed gas. [EHS200.03b Cryogenic Liquid Policy](#) addresses the same for cryogenic liquids. For information on liquid nitrogen emergency preparedness procedures, see [Liquid Nitrogen Emergency Preparedness](#).

## **SPILLS**

The clean up procedure for a spill will depend on the type and nature of the spill. Below are links to the clean up procedures for chemical, biological, and radioactive spills.

### **Chemical Spills**

A wide variety of hazardous chemicals are used throughout the LSU Health Sciences Center. Incidents involving hazardous chemical spills and exposures require prompt action by the responders in order to control chemical exposures to personnel and to minimize impacts to the environment and property. [EHS 200.02, Chemical Spill Response Procedures](#) is a general guidance for a rapid, appropriate, and safe response to chemical spills.

### **Biological Spills**

A wide variety of biohazard materials are used at the LSU Health Sciences Center. For general guidance information to provide a rapid, appropriate, and safe response on all biohazard spills, see [EHS 300.02, Biological Spill Response Procedures](#).

### **Radioactive Spills**

For information on radiation spill instructions, see [EHS 100.04, Radiation Spill Response Procedures](#).

## **LABORATORY WASTE DISPOSAL**

### **Chemical Waste:**

Laboratory operations that produce waste chemicals are considered as producing hazardous waste. Hazardous waste is regulated by the Louisiana Department of Environmental Quality (LDEQ). All laboratory personnel who produce hazardous waste are required to manage their waste per [EHS 200.04, Chemical Waste Management Procedures](#).

### **Biological Waste:**

For information on bio-hazardous waste disposal, see [Laboratory Waste Procedures](#).

### **Radioactive Waste:**

For more information on radioactive waste disposal, see [Laboratory Waste Procedures](#).

## **RECORDKEEPING**

Documentation and records are kept to demonstrate compliance with applicable regulations. All exposure and medical records will be kept in accordance with [OSHA 29 CFR 1910.1020, Access to Employee Exposure and Medical Records](#), and all inspection and training records will be kept for the current year and prior three fiscal years.

## **INSPECTIONS**

All supervisors/PIs and laboratory employees should routinely inspect their laboratory to ensure compliance with the CHP. In addition to this laboratory self-check, EHS will perform periodic inspections in accordance with [EHS 400.13, Laboratory Inspection Program](#).



## **Laboratory-Specific Training Checklist**

### **Updated March 17, 2014**

To promote a safe work environment and assure compliance with the OSHA Laboratory Standard, 29 CFR 1910.1450; the Louisiana Office of Risk Management (ORM); and the CDC BMBL 5<sup>th</sup> Ed. Section III, all laboratory personnel are to receive laboratory-specific training at the time of initial assignment and a minimum of annually thereafter. Training is also required prior to assignments involving exposure to new or additional hazards or potential hazards, or when safety performance is unsatisfactory.

Principal Investigators and/or laboratory supervisors will train their staff on the specific practices and techniques required to ensure safety in the conduct of their research and safety procedures for dealing with accidents related to their work. The attached checklist is provided as a guide for documenting this training. The checklist includes several procedures and policies generated by Environmental Health and Safety that may be applicable to your laboratory, and should also include any Standard Operating Procedures (SOPs) related to your protocols (e.g., IBC protocol) and procedures. The attached SOP template and sample SOPs are provided to assist you with developing SOPs. There is no requirement that your SOPs follow the format or structure of the attached template and examples; the template and sample SOPs simply display what type of information should ideally be included in an SOP (description of potential hazards, PPE requirements, links to resources, etc.). Each SOP that an individual employee is trained on should be included in that employee's training record.

To complete this checklist, please have the trainee initial on the line next to each item to confirm that they have been trained on the indicated item. For any sections that do not apply to **any** work done in your laboratory, please indicate "Not Applicable" (N/A). This training will be refreshed annually and records kept on file and are accessible for review.

If you have any questions, or if you would like additional guidance or assistance, please contact Mr. Taylor Kriete at [tkriet@lsuhsc.edu](mailto:tkriet@lsuhsc.edu) or at (504) 952-1337.



Employee Name_____	Department_____
Building_____	Room_____
Trainer_____	Date of Training_____

**Please attach copies of all laboratory SOPs, including IBC protocols, on which this employee is trained.**

### **Biological**

At what Biosafety Level (BSL) do you work? \_\_\_\_\_

- [Standard Operating Procedures for Safe Operation of Biological Safety Cabinets](#) \_\_\_\_\_
- [Standard Operating Procedures for Safe Operation of Autoclaves](#) \_\_\_\_\_
- [Standard Operating Procedures for Safe Handling of Sharps](#) \_\_\_\_\_
- [Standard Operating Procedures for Routine Decontamination](#) \_\_\_\_\_
- Laboratory emergency contact information \_\_\_\_\_
- NIH OBA Guidelines \_\_\_\_\_
- Lab-specific rDNA processes and procedures \_\_\_\_\_

### **Chemical**

- The [LSUHSC Chemical Hygiene Plan](#) including referenced Policies and Procedures. \_\_\_\_\_
- LSUHSC [High Hazard Chemical Policy](#) \_\_\_\_\_
- Laboratory High Hazard Chemical SOPs \_\_\_\_\_
- I am aware of the location and use of the laboratory's SDSs \_\_\_\_\_
- [Standard Operating Procedures for Safe Operation of Chemical Fume Hoods](#) \_\_\_\_\_

### **Radiological**

- [Radiation Survey Meter Policy and Operations](#) \_\_\_\_\_
- [Radiation Survey Meter – Scan Procedures](#) \_\_\_\_\_
- [Radiation Survey Wipe Test Policy and Procedures](#) \_\_\_\_\_
- [Radiation Safety – Liquid Scintillation Counter Use and Procedures](#) \_\_\_\_\_
- [Radiation Spill Response Procedures](#) \_\_\_\_\_

## DOCUMENTATION OF TRAINING FORM

All laboratory personnel shall receive training at the time of initial assignment to the lab and prior to assignments involving new exposure situations. Supervisors/PIs are responsible to provide laboratory-specific training to their laboratory personnel.

Employee Name \_\_\_\_\_ Department \_\_\_\_\_

Building \_\_\_\_\_ Room \_\_\_\_\_ Telephone Number \_\_\_\_\_

Training provided by \_\_\_\_\_ Date of Training \_\_\_\_\_

Procedure and/or chemical(s) covered by training

---

Topics covered by training: (Have employee initial after completion of topic)

\_\_\_\_\_ Contents of the OSHA [Laboratory Standard and its appendices](#)

\_\_\_\_\_ Contents and location of the LSUHSC CHP

\_\_\_\_\_ Standard Operating Procedure review

\_\_\_\_\_ Chemicals to be used

\_\_\_\_\_ Chemical Hazard Review

\_\_\_\_\_ SDS review (including exposure limits)

\_\_\_\_\_ Symptoms of exposure

\_\_\_\_\_ PPE selection and Use

\_\_\_\_\_ Fume Hood review

\_\_\_\_\_ Biological Safety Cabinet review

\_\_\_\_\_ Emergency information: Spills, Personal Injury, Fire Safety

\_\_\_\_\_ Proper waste disposal

\_\_\_\_\_ Additional Safety Topics (Please describe)

Employee Signature \_\_\_\_\_

## Template Form: Laboratory-Specific Standard Operating Procedures

TITLE:

Date:

Review

Date Revised:

Principle Investigator:

Authors (Names):

Department, Building, Room(s):

Contact Phone Number:

This SOP must be kept on file for all laboratory employee training and review.

### Section 1: (Check One)

There are three methods that can be used to write SOPs. They are: by process (e.g., distillation, synthesis, chromatography, etc.), by individual hazardous chemical (e.g., benzene, phenol, arsenic, etc.), and by hazardous chemical class (e.g., flammable, corrosive, oxidizer, etc.).

\_\_\_\_\_Process

\_\_\_\_\_Chemical

\_\_\_\_\_Hazard Chemical Class

### Section 2: Describe Process, Hazardous Chemical or Hazard Class

Include a general description of what activities are covered under this SOP. For a chemical, provide the common name, chemical name and CAS#.

### Section 3: Potential Hazards

Describe the potential hazards for each process, hazardous chemical or hazard class. Include physical and health hazards.

### Section 4: Personal Protective Equipment

Identify the required PPE. If a respirator is required, contact EHS before using.

### Section 5: Engineering Controls

Describe engineering controls that will be used to prevent or reduce employee exposure to hazardous chemicals

**Section 6: Special Handling and Storage Requirements**

List storage requirements for hazardous chemicals involved with the SOP, including specific area, and policies regarding access to chemicals. Special procedures such as dating peroxide formers are appropriate here. How will contamination of the lab be prevented? Is a special “designated area” required?

**Section 7: Spill and Accident Procedures**

Indicate how spills or accidental release will be handled. List the location of appropriate emergency equipment. Any special requirements for protection personnel from exposure should be identified here.

**Section 8: Decontamination Procedures**

Specify decontamination procedures to be used for equipment, glassware, and clothing: including equipment such as hoods, lab benches, and controlled (special “designated area”) areas within the lab.

**Section 9: Waste Disposal Procedures**

Waste must be disposed in accordance with LSUHSC EHS 200.04, Chemical Waste Management Procedures.

**Section 10: Laboratory Specific Protocol(s):**

Attach laboratory protocol for specific handling and operational practices.

## Laboratory-Specific Standard Operating Procedures (Example)

### **TITLE: Ethidium Bromide (Etbr) Use**

Date: 9/15/2010

Review Date:

Revised:

Principle Investigator: Dr. Smith

Authors (Names): Dr. Smith

Department, Building, Room(s): Physiology, CSRB, Room 555

Contact Phone Number: (504) 555-5555

This SOP must be kept on file for all laboratory employee training and review.

#### **Section 1: (Check One)**

There are three methods that can be used to write SOPs. They are: by process (distillation, synthesis, chromatography, etc.); by individual hazardous chemical (benzene, phenol, arsenic, etc.); and by hazardous chemical class (flammable, corrosive, oxidizer, etc.).

       Process                        X   Chemical                             Hazard Chemical Class

#### **Section 2: Describe Process, Hazardous Chemical or Hazard Class**

Provide a general description of what activities are covered under this SOP.

- Ethidium bromide is a non-radioactive marker used for identifying, and visualizing nucleic acid bands in electrophoresis and in other methods of gel-based nucleic acid separation.
- Ethidium bromide (CAS# 1239-45-8) is a dark red, crystalline, non-volatile solid, moderately soluble in water, which fluoresces readily with a reddish-brown color when exposed to ultraviolet light. Its formula is 2,7-Diamino-10-ethyl-9-phenyl-phenanthridium bromide.

#### **Section 3: Potential Hazards**

Describe the potential hazards for each process, hazardous chemical or hazard class. Include physical and health hazards.

- Ethidium bromide is a potent mutagen and moderately toxic after an acute exposure. Etbr is also an irritant to the skin, eye, mouth, and upper respiratory tract.

#### **Section 4: Personal Protective Equipment**

Identify the required PPE. If a respirator is required, contact EHS before using.

- Lab coats, closed-toed shoes, nitrile gloves, and chemical safety goggles are needed.

#### **Section 5: Engineering Controls**

Describe engineering controls that will be used to prevent or reduce employee exposure to hazardous chemicals.

- Pure Etbr should only be handled in a chemical fume hood.

### **Section 6: Special Handling and Storage Requirements**

List storage requirements for hazardous chemicals involved with the SOP, including specific area, and policies regarding access to chemicals. Special procedures such as dating peroxide formers are appropriate here. Is a special “designated area” required?

- Ethidium bromide should be stored away from strong oxidizing agents in a cool, dry place, and the container must be kept undamaged and tightly closed.
- Ethidium bromide will only be handled in the chemical fume hood and on the bench next to the hood that is labeled “Ethidium bromide Work Area”.
- When working with Ethidium bromide, always thoroughly wash hands with soap and water after removing the nitrile gloves.

### **Section 7: Spill and Accident Procedures**

Indicate how spills or accidental release will be handled. List the location of appropriate emergency equipment. Any special requirements for protection of personal from exposure should be identified here.

- For Accidents:

An emergency shower and eyewash station is located in the laboratory. If Etbr contacts the eyes, immediately flush the eyes with copious amounts of cold water for at least 15 minutes. For skin contact, immediately wash the affected area with soap and copious amounts of cold water. After any exposure to Etbr, the affected person should immediately inform their supervisor of the exposure and seek medical advice.

- For Spills:

Chemical spill kit is located in cabinet under the sink. For all spills, large or small, refer to the EHS 200.002, Chemical Spill Response Procedures. (See attachment for spill response procedures)

### **Section 8: Decontamination Procedures**

Specify decontamination procedures to be used for equipment, glassware, and clothing: including equipment such as hoods, lab benches, and controlled (special “designated area”) areas within the lab.

- Prepare the decontamination solution just prior to use. The solution consists of 4.2 g of sodium nitrite and 20 ml of 50% hypophosphorous acid in 300ml of water. Since the decontamination solution is acidic, wear lab coat, gloves, and goggles while preparing and handling the solution.
- Decontamination Procedure:
  - Wash the area with a paper towel soaked in decontamination solution.
  - Rinse the area five times with paper towels soaked with tap water, using a fresh towel each time.
  - Place the towels and the contaminated gloves in a 4 ml polyethylene bag lined cardboard box (provided by EHS).

- Using a UV light, check the area to ensure that all the Etbr has been removed. If any Etbr is present, repeat the decontamination process until no Etbr is present.

### **Section 9: Waste disposal Procedures**

Waste must be disposed in accordance with LSUHSC EHS 200.04, Chemical Waste Management Procedures.

- For disposal of all dry Etbr contaminated items such as gels, pipettes, paper towels, etc., place in a 4 ml polyethylene bag lined cardboard box (provided by EHS). When the box is  $\frac{3}{4}$  full, close and seal the bag, then close and seal the cardboard box. Label the box with the type of waste, date, researcher's name, building, room number, and the words "hazardous waste".
- To schedule a waste pick-up by EHS, use the [bob.lsuhs.edu](http://bob.lsuhs.edu) service request system.

**JSA FORM**  
**JSA WORKSHEET (FORM JSA-1-00)**

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