

## 11.0 CHEMICAL HYGIENE PLAN

### 11.1 General Information

*Note: The information written in this section refers to OSHA 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories. For more information on this OSHA standard, consult:*

[http://www.osha-slc.gov/OshStd\\_data/1910\\_1450.html](http://www.osha-slc.gov/OshStd_data/1910_1450.html)

The university maintains many teaching and research scientific laboratories throughout the campus. Many of these laboratories are supported by the use of chemicals and hazardous materials. In order to ensure a safe working environment for the employees and students who work and learn in these facilities, it is necessary for the university to implement a Chemical Hygiene Plan. Additional information regarding the safe use of scientific laboratories can be found in section 10 of the EH&S policy.

A Chemical Hygiene Plan (CHP) is a written program with procedures that are designed to protect persons from the health hazards presented by chemicals used in the workplace. The procedures in this plan apply to all employees and students and/or the facilities associated with them in which *any* of the following apply:

- Chemical manipulations are carried out as “laboratory scale”. That is, they are working with substances and containers used for reactions, transfers, and other handling purposes.
- Multiple chemical procedures are used.
- Procedures involved are not part of a production process (facility is not manufacturing chemicals).
- Protective laboratory practices and equipment are available and in use to minimize the potential for exposure to hazardous substances.

The EH&S office is responsible for providing guidance for these and other procedures as they pertain to chemical hygiene. The University department responsible for the chemicals shall also ensure that employees and students are being trained to recognize and protect themselves from the hazards associated with the use of chemicals. The EH & S office shall maintain all records associated with the CHP including Safety Data Sheets (SDS – see section 11.3)

Departmental Safety Coordinators shall be responsible for performing annual hazardous material inventories in accordance with the SARA Right to Know regulations. The DSC shall also coordinate hazardous material disposal procedures as outlined in section 11.25. In some cases, it may be necessary to appoint someone other than the DSC to handle matters as they relate to the CHP.

University faculty and staff are responsible for:

- Educating themselves on the CHP and its hazards as they pertain to their respective areas.
- Employees working around hazardous chemicals must take the University's Hazard Communication & RCRA training course within 30 days of hire into the area where hazardous chemicals reside. Refresher training is required every 3 years thereafter.
- Providing written operating procedures to students and other employees for specific laboratory and other HAZMAT related tasks.
- Providing appropriate personal protective equipment recommended in the SDS to personnel and require its use.
- Ensuring that all HAZMAT is properly contained, storage, and disposed of (if applicable) within their respective areas.
- Maintaining and understanding the SDS for all of the chemicals within their respective areas.

All students (student aids and graduate students) are responsible for:

- Following all safety and health standards and rules.
- Read and understand all information outlined in the SDS.
- Students working around hazardous chemicals must take the University's Hazard Communication & RCRA training course within 30 days of hire into the area where hazardous chemicals reside. Refresher training is required every 3 years thereafter.
- Reporting any hazardous condition to a supervisor, DSC, and/or the EH&S office.
- Wear the proper personal protective equipment recommended in the SDS when working with hazardous materials. This can be obtained from department faculty.

University personnel and students may not operate equipment or use hazardous materials without understanding the hazards associated with it. All persons should ask a supervisor for help when in doubt about any procedures.

## **11.2 Procedures for HAZMAT**

### **11.21 Chemical Procurement**

*Note: Employees purchasing hazardous materials must do so in conformance with the University's Procurement Standards and Procedures Manual.*

- Ordering chemicals is the responsibility of the University department.
- Chemicals may not be ordered unless there is adequate personal protective equipment to handle it upon delivery.
- Chemicals may not be ordered unless there is an adequate storage facility within the department for that hazardous material.
- The Facility Management Central Receiving Depot is in charge of taking delivery of all university shipments including chemicals. Employees at the Central Receiving Depot are regularly trained on the proper shipment and receiving of packages containing hazardous materials.
- The Central Receiving Depot shall refuse any chemical shipment that is not properly packaged in accordance with 49CFR173 and 49CFR177. This includes, but is not limited to, the following:
  - ✓ The package must identify that it contains HAZMAT on the outside of the package.
  - ✓ The package must be properly labeled with an appropriate DOT label indicating the flammability, reactivity, and health rating of the chemical.
  - ✓ The package must be intact. No chemical container within the package may be exposed or open.
  - ✓ The package must contain a SDS for each chemical included within the package. This copy shall be provided to the department for update its records.
- All chemical shipments shall be delivered to the university department in their original shipping package.
- University departments may not purchase quantities of chemicals that exceed what they can use prior to the expiration date or shelf life of the chemical.

### **11.22 Chemical Storage**

- Chemical from the Central Receiving Depot shall be immediately moved to their designated storage areas.

- In moving these chemicals, they shall be kept in their original shipping package until they are placed into their permanent storage facility (laboratory cabinet or applicable).
- Storage areas for chemicals shall be well illuminated to provide easier identification.
- Large bottles or containers of chemicals weighing more than 5 pounds should not be stored more than two feet from the ground.
- Chemicals shall be stored according to their hazard classification and compatibility.
- Whenever possible, acids should be stored in a separate cabinet from other chemicals.
- Bases, especially strong bases, should be stored in glass containers with a plastic or Teflon lid to avoid glass fusion.
- Light-sensitive chemicals should be stored in amber glass bottles to minimize the infiltration of ultraviolet light.
- Do not store liquid chemicals next to dry chemicals. Keep dry chemicals in a dry area to avoid moisture introduced reactions.
- Periodic inspection of chemicals in storage shall be included in the quarterly building inspections performed by the DSC (see section 3 and BSI-9-00 form, section 4).
- Cabinets that store flammable materials and chemicals:
  - ✓ Shall be made of metal no smaller (thinner) than 18 gauge.
  - ✓ Shall contain a sticker or permanent marking on the outside of the cabinet indicating that the contents within are flammable.
  - ✓ Shall contain a vent for allowing fumes to escape.
  - ✓ Shall not contain any paper or cardboard packaging or paperwork.

### **11.23 Chemical Handling and Safe Working Practices**

*Note: Additional laboratory safety information can be found in section 10*

- Smoking is not permitted in any area where chemicals are stored.

- University employees and students shall develop procedures such that the handling of and exposure to chemicals is kept to a minimum.
- When chemicals are brought from their storage area to a laboratory or other workspace, they shall be handled with care.
- If necessary, use a bucket or similar device to provide a protective barrier when transporting chemicals throughout the workspace.
- Do not transport or move chemicals that are not properly contained including a secure lid.
- Skin contact with any chemicals shall be avoided at all times.
- Use all personal protective equipment when handling chemicals (see section 9.21)
- All employees and students shall wash their hands and any other exposed skin with soap and water prior to leaving the laboratory or other chemical use area.
- Glassware and laboratory equipment or supplies shall not be used for food or drink consumption or preparation.
- Treat all unknown chemicals as though they are toxic and dangerous.

#### **11.24 Chemical Identification and Labeling Identification**

Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.

Each Label must include:

**Pictogram:** a symbol plus other graphic elements, such as a border, background pattern, or color that is intended to convey specific information about the hazards of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required under the HCS.

**Signal words:** a single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards; while "warning" is used for less severe hazards.

**Hazard Statement:** a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

**Precautionary Statement:** a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling of a hazardous chemical.

### Supplier Information

Chemicals may be identified using the following information:

	<p><b>1</b> <b>2-Propanol</b></p> <p><b>2</b> <b>Danger!</b></p> <p><b>3</b> <b>Highly flammable liquid and vapor</b> Causes mild skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.</p>	
<p><b>5</b> Keep away from heat/sparks/open flames/hot surfaces. - No Smoking. Avoid breathing dust/fume/gas/mist/vapours/spray. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness. May be harmful if absorbed through skin. Causes skin irritation. Causes eye irritation. May be harmful if swallowed.</p>		
<p><b>6</b> <b>Acme Chemical</b> <b>101 Main Street</b> <b>Anywhere, USA</b></p>		

**1** **Product Identifier / Ingredient Disclosure** - Chemical name, product name, or other unique identifier.

**2** **Signal Word** - When required, the signal word indicates the severity of the hazard of the chemical - "Danger" for more severe and "Warning" for less severe.

**3** **Hazard Statement** - Standardized phrases that describe the nature and degree of hazard.

**4** **Pictograms** - A black symbol on a white background with a red border which conveys information about the hazards of a chemical.

**5** **Precautionary Statement** - Standardized phrases that describe recommended measures that should be taken to minimize or prevent adverse effects that result from exposure to the chemical, or from improper handling or storage.

**6** **Supplier Identification** - Name, address, and phone number of the chemical manufacturer, importer, or other responsible party.

Pictogram and Signal Wording:

### HCS PICTOGRAMS & HAZARDS

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases under pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull &amp; Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

### Chemical Labeling

- Primary chemical containers shall be appropriately marked with a durable and informative label.

- Primary chemical container labels shall identify the chemical's source and any indication of hazard due to exposure.
- Secondary chemical containers shall be labeled by the individual using the container.
- Existing labels on chemicals shall not be removed or defaced unless another appropriate label is immediately attached.

### **11.25 Hazardous Materials Spill Prevention Control and Countermeasure Plan**

Dial 911 for all emergencies! University Police are available to respond 24/7. Please provide the 911 operator with your location, and the nature of your call.

#### **Large Spills**

- Large spills are defined as any spill or release of hazardous material that CANNOT be contained within 1 room OR poses an immediate threat to people or property.
- Any large spill on campus must be reported to University Police by dialing 911.
- If the spill is not able to be contained, or it poses a threat to the health or safety of the building occupants, pull the fire alarm for the building and assist in the evacuation of the occupants. Emergency evacuation plans are posted within our buildings, and can also be found with the Building Emergency Action Plan.
- Persons responsible for or with knowledge of the spill should evacuate the building, but do NOT leave the scene unless authorities have given you permission to do so.
- University Police will notify the fire department and the Environmental Health and Safety Director as necessary. For spills that extend outside of a University building, or pose a threat to ground water or municipal storm water drainage system, University Police or the EH&S Director shall notify the Louisiana Department of Environmental Quality at 225-342-1234
- The University has the ability to notify contractors 24 hours a day to assist in the cleanup process as necessary.

#### **Small spills**

- Small spills are defined as any spill or release of hazardous material that can be contained within 1 room and does NOT pose an immediate threat to people or property. Be aware that a spill can include a release of any hazardous gases.
- Small spills should be contained immediately to prevent the spread of hazardous materials or waste.

- If necessary, notify the Facility Management Department (24 hours a day at 482-6440) to request that the HVAC system within a building be shut down to prevent the spread of hazardous gases if this is a concern.
- Small spills can be cleaned up by neutralization, absorption, or any other safe method. However, all materials used in the clean-up process should be considered hazardous waste, and may need to be disposed of accordingly. Contact the EH&S Director for more information.

### 11.26 Hazardous Material Disposal

- Check to ensure that the material you are disposing is indeed hazardous. Contact the EH&S Office if you are not sure. Examples of these include:
  - ✓ **Ignitable** – Class I and II flammable liquids, solids that are capable of causing fire, flammable compressed gases, and oxidizers.
  - ✓ **Corrosives** – Aqueous solutions that have a PH  $\leq 2$  or  $\geq 12.5$  (strong acids and bases). Also, liquids capable of corroding mild steel at a rate  $> 6.35$  mm/year at 55 degrees C.
  - ✓ **Reactive Substances:** Substances that react violently; produce toxic gases, or explosive mixtures when mixed with water.
- Properly label waste containers with the words “hazardous waste”, the exact contents of the bottle including percentages, and the start accumulation date of the container, if applicable.
- Keep waste in proper containers at all times.
- Keep waste container closed at all times.
- The departments that generate the waste shall inventory hazardous waste regularly. Hazardous waste of any kind may not be stored more than 270 days, per RCRA regulations.
- Hazardous material waste pickups shall be coordinated by the EH&S office.
- Documentation associated with all waste pickups will be maintained by the EH&S office including manifests and Certificates of Final Disposal (CD).
- To arrange for waste pickup, departments shall complete an HWD-11-00 form and mail this document to the EH&S office. This form can be obtained from the EH&S office at 482-1840 or via the EH&S website at <http://www.safety.louisiana.edu> . A blank copy of the HWD-11-00 form is also included on the next page of this section.



### 11.3 Record Keeping for Hazardous Materials: SDS

A Safety Data Sheet (SDS) is a document that contains information about a chemical or hazardous substance including its manufacturer, emergency information, and all hazards associated with exposure to the chemical. SDS sheets can also be downloaded from [www.sigmaaldrich.com](http://www.sigmaaldrich.com) or on the University's CAMEO Chemicals Program, which is a database of all chemicals used on campus is inventoried, stored and updated annually.

- For access to the CAMEO Chemicals Program, please contact the EH&S office at 482-1840.
- The EH&S office shall maintain the Cameo Chemicals Program.
- Employees and students who use chemicals should understand how to read SDS sheets.
- SDS sheets for all chemicals within a department should be organized alphabetically in a binder with all emergency phone numbers located on its cover and placed in the Department Heads office.
- All employees should know where the SDS binder is located and how to access the CAMEO Chemicals program.
- Never store the SDS binder or the lab computer with CAMEO access near a chemical or flammable storage cabinet. Should chemicals begin reacting in the cabinet, it is dangerous to approach these chemicals to retrieve the SDS sheet.

The following is a table of contents on what the Safety Data Sheets (SDS) contains:

- Section 1. Identification
- Section 2. Hazard(s) identification
- Section 3. Composition/information on ingredients
- Section 4. First-Aid measures
- Section 5. Fire-fighting measures
- Section 6. Accidental release measures
- Section 7. Handling and storage
- Section 8. Exposure controls/personal protection
- Section 9. Physical and chemical properties
- Section 10. Stability and reactivity
- Section 11. Toxicological information
- Section 12. Ecological information
- Section 13. Disposal considerations
- Section 14. Transport information
- Section 15. Regulatory information
- Section 16. Other information, including date of preparation or last revision