Standard Operating Procedure

Non-Emergency Chemical Spill Response and Cleanup

**This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.**

Print a copy and insert into your *Lab-Specific Chemical Hygiene Plan*.

# **Section 1 – Lab-Specific Information**

| **Department:** | Click here to enter text. |
| --- | --- |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:**  | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Section 2 – Type of SOP:**

[x]  Process [ ] Hazardous Chemical [ ]  Hazardous Class

**Section 3 – Process Description**

This SOP details the steps that must be taken by lab personnel to respond to and cleanup a hazardous chemical spill that **DOES NOT** pose an emergency situation. Non-emergency chemical spills are generally defined as less than 1 liter, do not involve a highly toxic or reactive material, do not present a significant fire or environmental hazard, and are not in or pose a threat to a public area such as a hallway. These spills can be cleaned up by properly trained lab personnel using conventional lab PPE (e.g., safety glasses/goggles, lab coat, chemical-resistant gloves) and the lab spill kit.

**Section 4 – Potential Hazards**

Chemical spills can vary greatly depending on the specific chemical spilled, volume, location, and several other potential factors. Therefore, detailed hazard information cannot be communicated in a general SOP such as this. The Laboratory Supervisor should be consulted if the particular hazards of the chemical spilled are not fully understood. The SDS for the chemical that is spilled should also be reviewed to obtain information about potential hazards.

**Section 5 – Personal Protective Equipment (PPE)**

**Respirator Protection:**

If respiratory protection is required to safely clean up the non-emergency spill, for example if the spill is a lachrymator, or presents an inhalation hazard, then lab personnel should not proceed with the spill cleanup process. Immediately evacuate the area and contact REM and/or the Purdue Fire Department for assistance.

**Hand Protection:**

Chemical-resistant gloves must be worn. Use proper glove removal technique to avoid any skin contact. Wearing two pairs of chemical-resistant gloves is recommended. It is critical that the glove being worn is resistant to the particular chemical that is spilled. Check the resources below for the most suitable glove. Also check the SDS for the specific acutely toxic compound being handled.

**NOTE:** Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with the specific acutely toxic compound being used.

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection:**

ANSI approved properly fitting chemical splash goggles or safety glasses are required.

**Skin and Body Protection:**

Laboratory coats must be worn and be appropriately sized for the individual and buttoned to their full length. Laboratory coat sleeves must be of sufficient length to prevent skin exposure while wearing gloves. Personnel must also wear full length pants, or equivalent, and close-toed shoes. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle must not be exposed.

**Hygiene Measures:**

Wash thoroughly and immediately after the spill cleanup is complete. Remove any contaminated clothing and wash before reuse.

**Section 6 – Engineering Controls**

**Chemical Fume Hood**

The majority of laboratories where chemical spills occur are equipped with chemical fume hoods. If any closed container of a hazardous chemical must be opened or transferred during the course of performing the chemical spill cleanup, this process should be performed in a chemical fume hood if possible. Ensure the hood is functioning properly before any activities are performed. It is often helpful to open all of the fume hoods in a lab during and after the spill cleanup process to help quickly ventilate the room of hazardous or irritating vapors (the hallway door to the lab should be closed to ensure optimal air transfer).

**Safety Shower / Eyewash Stations**

The majority of laboratories where chemical spills occur have a safety shower and eyewash station nearby. Before beginning the spill cleanup, familiarize yourself with the location of the nearest safety shower and eyewash station.

**Fire Extinguishers**

The majority of laboratories where chemical spills occur have a fire extinguisher nearby. Before beginning the spill cleanup, familiarize yourself with the location of the nearest fire extinguisher. Pay attention to the type of fire extinguisher that is present in the area and make sure that it is appropriate to extinguish a fire that could result from handling the type of chemical(s) that are being cleaned up. If there is a high risk of a fire to occur during the spill cleanup process then lab personnel should not respond to the spill, the Purdue Fire Department should be called immediately (**dial 911**) and the building should be evacuated.

**Section 7 – First Aid Procedures**

**If inhaled:**

Move into the fresh air immediately and seek immediate medical attention. If not breathing give artificial respiration and seek immediate medical attention.

**In case of skin contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash any contaminated clothing before reuse. Thoroughly clean shoes before reuse. Seek immediate medical attention.

**In case of eye contact:**

Check for and remove any contact lenses. Rinse thoroughly with plenty of water for at least 15 minutes. Seek immediate medical attention.

**If swallowed:**

Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

**Section 8 – Protocol/Procedure**

Chemical spills can vary greatly depending on the specific chemical spilled, volume, location, and several other potential factors. Therefore, the protocol listed below cannot always be followed exclusively.

1. Before lab staff attempt to clean up the spill, the level of response necessary should be evaluated based on the following criteria:
	* 1. Potential impact to human health;
		2. Potential impact to the environment (air, water, land); and
		3. Potential impact to Purdue property (physical damage to facilities or equipment).
2. Next, assess the quantity of material spilled and the extent of the affected area. Restrict access based on this initial assessment. Identify any personnel that require medical follow-up from exposure to spilled material. An important reminder,ask for help as needed; spills should not be cleaned up by one individual. **Control** the amount and kind of material involved with the spill. **Contain** the spill to the smallest area possible and prevent movement off-site if possible. **Cleanup** the spilled material following spill response guidelines.
3. Define the area to be cleaned, establishing a beginning point and methodically work from start point to final cleanup using an outside in approach. Before beginning the cleanup, establish a **“hot zone”** (area of cleanup), a **“warm zone”** (an area to decontaminate equipment, PPE, and a staging area for waste accumulation), and a **clean zone.**
4. Wear appropriate PPE for the material spilled and avoid breathing any vapors or dusts from spill. Use appropriate spill control material to first contain and absorb the spill according to procedures previously obtained from SDS. Generally, loose spill control material (e.g., oil dry, neutrasorb) or pads should be distributed over the entire spill area, working from the outside, circling to the center. This reduces the chance of splashing or spreading of the spill. Diking of the perimeter of the spill area with spill control material will prevent movement off-site.
5. For spills of acids and bases, use appropriate procedures (as obtained from the SDS) and material to contain, neutralize, and absorb the material.
6. For flammable liquids, remove or deactivate all potential ignition sources. Make efforts to prevent the spread of vapors within buildings (e.g., shutting doors). Select and use appropriate material to contain and absorb the spill.
7. When the spilled materials have been absorbed, use a brush/broom and scoop/shovel (spark-resistant if flammable material is involved) to place materials in an appropriate container. Decontaminate the surface where the spill occurred before allowing normal work activities to resume in the area. Ventilating the spill area may be necessary.
8. Upon completion of the spill cleanup, response personnel should move to the decontamination area, “warm zone”, for decontamination of equipment and PPE. All disposable PPE shall be placed in an appropriate container and described as spill debris.

**Section 9 – Spill and Accident Procedures**

**Chemical Spill Dial 911**

If at any point the non-emergency spill creates an emergency situation or cannot be safely cleaned up by lab personnel, immediately evacuate area and ensure others are aware of the spill. If there is an imminent threat of a fire, pull the nearest fire alarm station to evacuate the building and **dial 911**. If the spill is minor and does not pose a threat to personnel, contact REM at 49-40121 during normal business hours (7 AM – 4 PM) for spill cleanup assistance (dial 911 if spill occurs after hours and assistance is needed).

**Chemical Spill on Body or Clothes:**

Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes.  Seek medical attention; **dial 911**.

**Chemical Splash into Eyes:**

Immediately rinse eyes and inner surface of eyelid with water from the emergency eyewash station for 15 minutes by forcibly holding the eye open. Seek medical attention; **dial 911**.

**Section 10 – Medical Emergency**

**Life Threatening Emergency, After Hours, Weekends And Holidays:**

**Dial** **911**

**Non-Life Threatening Emergency**:

Immediately report injury to supervisor and complete the First Report of Injury. (<http://www.purdue.edu/rem/injury/froi.htm>)

**Section 11 – Waste Disposal Procedures**

**Label Waste:**

Make sure the waste container(s) is properly labeled; label should indicate all of the contents of the container. REM provides hazardous waste labels free of charge, call 49-40121 to obtain labels.

**Store Waste**:

Store hazardous waste in closed containers, and in a designated area. All debris such as absorbent materials, glass, or other media that comes in contact with the spill chemical should be collected and place into a container such as 5-gallon bucket and/or bag.

**Dispose of Waste:**

Chemical spill cleanup waste such as contaminated debris (e.g., pads, paper towels) should not be thrown in the trash. Complete a Chemical Waste Pickup Request Form to arrange for disposal by REM. Call REM at 49-40121 or visit the REM webpage for questions (<http://www.purdue.edu/rem/hmm/wststo.htm>).

**Section 12 – Safety Data Sheet (SDS)**

A current copy of the SDS for the specific chemical spilled be made available to all personnel working in the laboratory at all times. To obtain a copy of the SDS, contact the chemical manufacturer or REM at 49-46371. Many manufacturers’ SDSs can be found online on websites such as Sigma-Aldrich (<http://www.sigmaaldrich.com/united-states.html>) or Siri MSDS Index (<http://hazard.com/msds/>).

**Section 14 – Documentation of Training (signature of all users is required)**

* Prior to conducting any work with acutely toxic materials, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and a copy of the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.

**I have read and understand the content of this SOP:**

| **Name** | **Signature** | **Date** |
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