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PRE-PLANNING FOR AND RESPONDING TO CHEMICAL SPILLS		
Investigator: General Safety	Location: EHS	Revision: 1.0

1.0 PURPOSE:

Chemical spills and releases vary considerably in significance. If it is possible for the person involved to clean up the spill or stop the release safely, then it is appropriate for the person to do so. If the spill exceeds the capability of the person involved to control, then leaving the area is the proper response. Notification of spill events is always required. This SOP is intended to guide the user in preparing for and responding to chemical spills, so as to minimize the severity of such incidents. This SOP does not address spills or releases of infectious agents, radioactive materials, or mercury.

2.0 SCOPE:

This procedure applies to all Louisiana State University Personnel that work with chemicals. It is the intent of this guideline to provide information on the proper responses in the event of a chemical spill.

3.0 RESPONSIBILITIES:

Only trained and qualified personnel shall be allowed to work with chemicals at LSU. Each worker is directly responsible for the safe handling of chemicals as required by his or her position. Supervisors are responsible for ensuring that personnel are trained to work safely with chemicals. All personnel who work with chemicals are responsible for reading and understanding this procedure.

4.0 DEFINITIONS:

4.1 SMALL SPILL

It is critical that the user know the properties and hazards of the individual chemicals that they work with because of varying routes of exposure and occupational exposure limits. All spill response decisions must be based on the actual chemical involved. The following information is intended only as general guidance. Consult the appropriate MSDS for specific guidance. In general, a small spill is defined as a release that meets the following parameters:

4.1.1 Adequate supplies and PPE are readily available

4.1.2 Respiratory protection is not necessary to avoid over-exposure during the clean-up, and the spill is not in an unventilated or enclosed space that must be bodily entered.

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4.1.3 The spilled material is not highly toxic, does not endanger people or property except by direct contact, and has good warning properties (e.g., does not deaden the senses; is detected by the senses at concentrations well below the exposure limits; and, exposure produces immediate, and reversible effects- not delayed or permanent effects).

4.1.4 The spill is not likely to spread beyond the area immediately involved.

4.1.5 The threat of secondary events is minimal (e.g., explosions, fires, etc.). Water reactive and air-reactive chemicals, highly flammable solvents in the presence of potential ignition sources, and strong oxidizing agents typically present increased risk for secondary events.

4.2 LARGE SPILL

A chemical spill event that poses an imminent danger to health, property, or the environment

4.3 SPILL KIT

A self contained collection of material to be used in the event of a chemical spill.

5.0 REFERENCES:

Not Applicable

6.0 MATERIALS and/or EQUIPMENT:

6.1 SPILL KITS

A spill kit should be assembled of the following materials:

6.1.1 Personal Protective Equipment

6.1.1.1 Splash Goggles

6.1.1.2 Face shield

6.1.1.3 Assortment of chemically resistant gloves

6.1.1.4 Protective outer garment (i.e., Tychem® suit, apron, lab coat, etc.)

6.1.2 Diking Materials and Absorbents. Diatomaceous earth and vermiculite are relatively inexpensive and effective diking/absorbing agents. However, spill pillows and pads are easier to store and use. When selecting pads or pillows, select a “universal” type that is compatible with a broad range of chemicals.

6.1.3 Neutralizing Agents. Citric acid can be used to neutralize caustics. Soda ash can be used to neutralize acids. However, neutralization can often cause splashing,

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vigorous gas evolution, and become quite messy. They can also form salt deposits that are hard to remove from floors and other surfaces. Generally, it is much easier and neater to absorb acids and bases with compatible pillows or pads, or diatomaceous earth.

- 6.1.4 Disposal containers for spill cleanup residues and contaminated materials. Plastic pails or buckets equipped with lids are excellent choices. Heavy plastic bags can also be used. If heavy plastic bags are selected, have some duct tape handy to seal the bag after use.
- 6.1.5 Equipment. Brushes, brooms, scoops, shovels, dust pans, and other like items that may be necessary to facilitate remote handling of contaminated materials and absorbents.
- 6.1.6 Decontamination equipment and materials. Soap and scrub brushes will be needed for final area and equipment decontamination.
- 6.1.7 Fire Extinguisher properly classed for the chemical.
- 6.1.8 First aid kit.
- 6.1.9 Hazardous Material Collection Tags.
- 6.1.10 Special spill control materials as recommended in the Material Safety Data Sheet or as required to prevent releases from spreading to likely receptors (i.e., impervious drain blocks for floor drains, etc.

7.0 PROCEDURES:

7.1 PRE-PLANNING FOR AND RESPONDING TO CHEMICAL SPILLS

- 7.1.1 Review Material Safety Data Sheets (MSDSs) to become familiar with the physical and health hazards of chemicals used and stored in the work area. Note and adhere to recommendations regarding special precautions, spill equipment, or controls.
- 7.1.2 Identify and document procedures and/or equipment failures that could result in releases or exposures.
- 7.1.3 Identify area specific features that may increase or decrease the potential for spills or exposures, as well as the response actions taken to minimize the hazards. For example, sources of ignition in an area where flammable liquids are stored are important considerations for both pre-planning to avoid an emergency and in the actions to take in response to an adverse event.

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- 7.1.4 Identify potential receptors (i.e., floor or sewer drains, adjacent areas, other rooms on the same air supply system, etc.) and plan for actions to take to minimize releases via these receptors.
- 7.1.5 Identify maximum quantities of materials that could be released under various conditions (i.e., during container handling, dispensing, fire conditions, etc.).
- 7.1.6 Identify needed and available personal protective equipment, emergency communication devices, spill supplies, fire extinguishers, eye wash stations, emergency showers, first aid kits, and other equipment that are readily available to respond to an accident or release. Know the maximum quantity of released material for which you are adequately prepared to respond, and when outside assistance will be needed.
- 7.1.7 Identify building evacuation routes.
- 7.1.8 Identify campus service units, fire department, and hazardous materials response team notification procedures.
- 7.2 **APPROPRIATE RESPONSE STEPS FOR A SMALL SPILL.**
 - 7.2.1 Take action to stop the release (i.e., upright containers, close valves, etc.).
 - 7.2.2 Alert others in the immediate vicinity and notify your supervisor, if possible. Ensure that extraneous personnel remain at a safe distance until the spill is completely cleaned-up. One of these people can serve as a “monitor” and alert emergency response personnel if the spill unexpectedly results in an emergency.
 - 7.2.3 Evaluate the risks to health, property, or the environment and confirm the “small” nature of the spill.
 - 7.2.4 Contain the spill. This may involve increasing ventilation via fume hoods or windows if a volatile material is involved, sealing floor drains, closing doors, inactivating potential sources of ignition, etc.
 - 7.2.5 Don appropriate personal protective equipment.
 - 7.2.6 Control the spread of liquids. If the material is a liquid and it can spread, form a dike around the perimeter of the spill with absorbent.
 - 7.2.7 Absorb the liquid on the interior of the dike with additional granular absorbent, spill pillows, or absorbent pads.
 - 7.2.8 Place all absorbents into a heavy plastic bucket or bag and seal the container. Scoops, shovels, tongs, and other remote handling devices work well.

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7.2.9 If the spill involves solid granular or powdered material, take care not to create dusts while scooping the material into a sealable container. So long as the material is not water-reactive, it can be misted with water to prevent dust formation.

7.2.10 Decontaminate the spill area and non-disposable equipment by thoroughly cleaning with soap and water.

7.2.11 Thoroughly wash hands, arms, face, and other potentially contaminated body parts.

7.2.12 Tag the spill residues, absorbents, and disposable equipment for collection by EHS.

7.2.13 Notify EHS of the spill so follow-up action can be initiated as necessary.

7.3 APPROPRIATE RESPONSE STEPS FOR A LARGE SPILL

In the case of imminent danger to health, property, or the environment, initiate the following action:

7.3.1 Notify Supervisor and determine the level of severity.

7.3.2 For indoor releases/spills: Leave the area and pull the fire alarm to initiate building evacuation. This will initiate notification of EHS and LSU Police.

7.3.3 For outdoor releases/spills: Notify EHS (578-5640) and LSU Police (578-3231). If possible to do so safely (without risk of over-exposure), take action to stop the release (i.e., shutting valves, etc.) and prevent or minimize releases to storm sewers. Do not initiate evacuation from buildings unless otherwise advised by emergency responders.

7.3.4 Render appropriate first aid. Thoroughly wash exposed areas of the skin with soap and water.

7.3.5 Remain at a safe location near the scene and present yourself to emergency response personnel to provide information: name of the chemical released, amount, location, potential hazards of the chemical and possible secondary hazards, potential receptors, etc.

7.3.6 Follow instruction from EHS and LSU Police.

7.3.7 Large spills and spills that occur to the environment may require reporting to regulatory authorities and other follow-up action. EHS will file necessary reports.

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8.0 DETERMINATION OF SEVERITY LEVEL

The level of severity is determined from the following:

8.1 LEVEL 1

Minor spill in work or lab area controlled and cleaned up by workers or lab personnel. No response by EHS or LSU Police

8.2 LEVEL 2

Moderate spill which causes work area personnel to be unable to control and/or clean up. Such may include accidents where large areas in the work area are impacted by debris or chemicals. EHS will control activities with assistance from campus police and perform gross cleanup. Where injuries are involved, Baton Rouge EMS will be called by LSU Police if needed. (Refer to NOTE under Level 3 if a serious injury is involved.)

8.3 LEVEL 3

Large spill which is not a threat to the public and is contained or limited to the campus. Such spill may require evacuation of buildings under the direction of LSU Police. Baton Rouge City Hazmat will be called to assist or take control where there is need for analytical assistance, site assessment and / or manpower. Hazmat will assume role of Incident Commander with assistance from EHS and University supervision/faculty.

8.3.1 The Louisiana State Police Right to Know Unit and the Baton Rouge Fire Department Hazmat Unit will be contacted if there is a hazardous materials release with:

8.3.1.1 An injury with hospitalization or a fatality.

8.3.1.2 Fire or explosion which potentially threatens off site personnel, or

8.3.1.3 Release of a hazardous material in an amount which exceeds the reportable quantity (check with EHS for quantities), and which may get offsite.

8.4 LEVEL 4

An event where a major portion of the campus is affected or the spill is a threat to the neighboring community or the environment. In this event, City Hazmat and State Police will be notified to assume incident commander status and coordinate activities of all concerned. Such an event would include train derailment, tanker truck accident, pipeline rupture, plane crash, major fire involving hazardous materials, etc. All other agencies will follow the guidance of the State Police.

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8.4.1 Containers of chemicals or chemical mixtures that may be unstable or sensitive to movement may have to be handled as a bomb. In such cases, EHS will work through LSU Police to have the Baton Rouge City Police Bomb Squad respond.

9.0 POST INCIDENT REVIEW

EHS will conduct post incident review of Level 2 or above spills in an effort to mediate the underlying causes.

10.0 REVIEWS AND REVISIONS:

This procedure shall be reviewed for compliance and effectiveness and revised as necessary on an annual basis.

10.0 ATTACHMENTS and REFERENCE FORMS:

Not Applicable

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