

4.2 Chemical Spills

4.2.1 Spill Response and Clean-up Procedures

In the event of a chemical spill, the individual who caused the spill is responsible for prompt and proper clean up. It is also their responsibility to have spill control and personal protective equipment appropriate for the chemicals being handled readily available. See Developing a Spill Response Plan for more information.

The following are general guidelines to be followed for a chemical spill. More detailed procedures may be available with your laboratory spill response plan or lab supervisor or principal investigator.

1. Immediately alert area occupants and supervisor, and evacuate the area, if necessary.
2. If there is a fire or medical attention is needed, immediately contact 911.
3. Attend to any people who may be contaminated. Contaminated clothing must be removed immediately and the skin flushed with water for no less than fifteen minutes. Clothing must be laundered before reuse. See first aid for more information.
4. If a volatile, flammable material is spilled, immediately warn everyone, control sources of ignition and ventilate the area.
5. Don personal protective equipment, as appropriate to the hazards. Refer to the Safety Data Sheet or other references for information.
6. Consider the need for respiratory protection. The use of a respirator or self-contained breathing apparatus requires specialized training and medical surveillance. Never enter a contaminated atmosphere without protection or use a respirator without training. If respiratory protection is needed and no trained personnel are available, call EHSRM at 468-6034. If respiratory protection is used, be sure there is another person outside the spill area in communication, in case of an emergency. If no one is available, contact 911 or EHSRM.
7. Using the chart below, determine the extent and type of spill. If the spill is large, if there has been a release to the environment or if there is no one knowledgeable about spill clean-up available, contact EHSRM at 468-6034 or 911.

Category	Size	Response	Treatment Materials
Small	up to 300cc	chemical treatment or absorption	Neutralization or absorption spill kit
Medium	300 cc - 5 liters	absorption	Absorption spill kit
Large	more than 5 liters	call EHSRM	outside help

8. Irrespective of the size of the spill notify EHSRM.
9. Protect floor drains or other means for environmental release. Spill socks and absorbents may be placed around drains, as needed.

10. Contain and clean up the spill according to the table above.
Loose spill control materials should be distributed over the entire spill area, working from the outside, circling to the inside. This reduces the chance of splash or spread of the spilled chemical. Bulk absorbents and many spill pillows do not work with hydrofluoric acid. POWERSORB (by 3M) products and their equivalent will handle hydrofluoric acid. Specialized hydrofluoric acid kits also are available. Many neutralizers for acids or bases have a color change indicator to show when neutralization is complete.
11. When spilled materials have been absorbed, use brush and scoop to place materials in an appropriate container. Polyethylene bags may be used for small spills. Five gallon pails or 20 gallon drums with polyethylene liners may be appropriate for larger quantities.
12. Complete a hazardous waste sticker, identifying the material as Spill Debris involving XYZ Chemical, and affix onto the container. Spill control materials will probably need to be disposed of as hazardous waste. Contact EHSRM at 468-6034 for advice on storage and packaging for disposal.
13. Decontaminate the surface where the spill occurred using a mild detergent and water, when appropriate.
14. Report all spills to your supervisor or the Principal Investigator.

4.2.2 Developing a Spill Response Plan

An effective spill response procedure should consider all of the items listed below. The complexity and detail of the plan will, of course depend upon the physical characteristics and volume of materials being handled, their potential toxicity, and the potential for releases to the environment.

1. Review Safety Data Sheets (SDSs) or other references for recommended spill cleanup methods and materials, and the need for personal protective equipment (e.g., respirator, gloves, protective clothing, etc.)
2. Acquire sufficient quantities and types of appropriate spill control materials to contain any spills that can be reasonably anticipated. The need for equipment to disperse, collect and contain spill control materials (e.g., brushes, scoops, sealable containers, etc.) should also be reviewed. See recommended spill control materials inventory for more details. EHSRM maintains few spill control kits that can be used if no other materials are available.
3. Acquire recommended personal protective equipment and training in its proper use. For example, if an air purifying respirator or self-contained breathing apparatus are needed, personnel must be enrolled in the Respiratory Protection Program and attend annual training and fit-testing.
4. Place spill control materials and protective equipment in a readily accessible location within or immediately adjacent to the laboratory.
5. Develop a spill response plan that includes:
 - o Names and telephone numbers of individuals to be contacted in the event of a spill.
 - o Evacuation plans for the room or building, as appropriate.
 - o Instructions for containing the spilled material, including potential releases to the environment (e.g., protect floor drains).
 - o Inventory of spill control materials and personal protective equipment.

- Means for proper disposal of cleanup materials (in most cases, as hazardous waste) including contaminated tools and clothing.
 - Decontamination of the area following the cleanup.
6. Discuss the spill response plans with all employees in the area.

4.2.3 Recommended Spill Control Material Inventory

Your laboratory or work area should have access to sufficient quantity of absorbents or other types of materials to control any spill that can be reasonably anticipated.

Personal Protective Equipment

- 2 pairs chemical splash goggles
- 2 pairs of gloves (recommend Silver Shield or 4H)
- 2 pairs of shoe covers
- 2 plastic or Tyvek aprons and/or Tyvek suits

Absorption Materials

- 4 3M POWERSORB spill pillows (or equivalent)
- 1 3M POWERSORB spill sock
- 2 DOT pails (5 gallon) with polyethylene liners
 - 1 filled with loose absorbent, such as vermiculite or clay
 - 1 with minimum amount of loose absorbent in the bottom

Neutralizing Materials

- Acid Neutralizer
- Caustic Neutralizer
 - commercial neutralizers, such as Neutrasorb (for acids) and Neutrakit-2 (for bases) have built in color change to indicate complete neutralization
- Solvent Neutralizer
 - commercial solvent neutralizers, such as Solusorb, act to reduce vapors and raise the flashpoint of the mixture

Mercury Spills

- Small mercury vacuum to pick up large drops (optional)
- Hg Absorb Sponges - amalgamate mercury residue
- Hg Absorb Powder - amalgamates mercury
- Hg Vapor Absorbent - reduces concentration of vapor in hard to reach areas
- Mercury Indicator - powder identifies presence of mercury

Clean-up Tools

- Polypropylene scoop or dust pan
- Broom or brush with polypropylene bristles
- 2 polypropylene bags
- sealing tape
- pH test papers
- waste stickers
- floor sign - **DANGER Chemical Spill - Keep Away**