

UW – Green Bay

Chemical Spills Guidance

For the purpose of chemical spill response planning at UW-Green Bay, spills will be classified as either:

- A simple spill – a spill you can safely clean up yourself.
- A complex spill – a spill which requires outside assistance for cleanup.

Simple Spills

A simple spill is defined as one that you can safely clean up yourself and

- Does not spread rapidly
- Does not endanger people or property except by direct contact, and
- Does not endanger the environment

To determine whether a spill is simple or complex you need to know the hazard(s) posed by the spilled chemical and the spill's potential impact. The spill's size is another important factor. The following information will help you determine whether you have a simple spill:

- The type of chemical spilled
- The amount
- The hazardous characteristics of the spilled chemical(s)
- The location
- The proper method for cleaning up the spill
- The personal protective equipment available
- The training of the laboratory personnel

Simple spill management is explained in the section below.

Complex Spills

If you say "yes" to any of the following when evaluating a chemical spill, you are dealing with a complex spill which requires outside assistance. **Call 911** to report the spill and request outside assistance. Also call the Safety Manager, x2273 for assistance in managing situation.

- Has a person been injured?
- Is there fire present or has an explosion occurred?
- Is the spill spreading beyond the immediate area?
- Is the identity of the spilled chemical unknown?
- Is there is a risk of spilled chemical entering sewer or contaminating soil?
- Is the spill located in confined space or poorly ventilated area?
- Are flammable vapors and ignition sources present?
- Are toxic vapors or dusts are present?
- Spilled chemical is a strong oxidizer?
- Spilled chemical is reactive with air or water or is otherwise highly reactive?
- Spill is in high occupancy/frequently traveled area and evacuation is required to secure scene?

Remember, if you say "yes" to any of the above, you are dealing with a complex spill – **Call 911**.

Simple Spill Management

The following section explains how to handle a simple spill or release in the laboratory.

A. Preplanning

1. A spill containment/clean-up plan should be established to handle chemicals you use in the laboratory. Consideration must be given to the maximum amount used and concentrations of chemicals. Familiarize yourself with spill clean-up equipment available. If necessary obtain sufficient supplies to handle potential spills.
2. The person causing a spill or release is responsible for clean up to the extent of his/her ability. Laboratory technicians may be available for assistance but they are not responsible for cleanup. Persons who work with chemicals are expected to know how to safely clean up spills of these chemicals.

B. Simple Spill Cleanup

1. Prevent the spread of dusts and vapors. If the substance is volatile or can produce airborne dusts, close the laboratory door and increase ventilation (through fume hoods, for example) to prevent the spread of dusts and vapors to other areas.
2. Neutralize acids and bases if possible. Spills of most liquid acids or bases, once neutralized can be mopped up and rinsed down the drain (to the sanitary sewer). However, be careful because the neutralization process is often vigorous, causing splashes and yielding large amounts of heat. Neutralize acids with soda ash or sodium bicarbonate. Bases can be neutralized with citric acid or ascorbic acid. Use pH paper to determine when acid or base spills have been neutralized.
3. Control the spread of the liquid. Contain the spill. Make a dike around the outside edges of the spill. Use absorbent materials such as vermiculite, cat litter, or spill pillows.
4. Absorb the liquid. Add absorbents to the spill, working from the spill's outer edges toward the center. Absorbent materials, such as cat litter or vermiculite, are relatively inexpensive and work well, although they are messy. Spill pillows are not as messy as other absorbents, but they are more expensive. Note that special absorbents are required for chemicals such as hydrofluoric and concentrated sulfuric acids.
5. Collect and contain the cleanup residues. The neutralized spill residue or absorbent should be scooped, swept, or otherwise placed into a plastic bucket or other container. For dry powders or liquids absorbed to dryness, double bag the residue using plastic bags. Additional packaging may be required before the wastes can be transported from your laboratory. Be sure to label containers.
6. Dispose of the wastes. Keep cleanup materials separate from normal trash. Contact the Safety Manager, 2273, for guidance in packaging and labeling cleanup residues. Promptly place cleanup wastes in an appropriate hazardous waste receptacle.
7. Decontaminate the area and affected equipment. Ventilating the spill area may be necessary. Open windows or use a fan unless the area is under negative pressure. In some instances, your environmental health and safety officer can test the air to ensure that hazardous vapors are gone. For most spills, conventional cleaning products, applied with a mop or sponge, will provide adequate decontamination.

C. Special Precautions

1. *Flammable liquids:* **Remove all potential sources of ignition.** Vapors are what actually burn, and they tend to accumulate near the ground. Flammable liquids are best removed through the use of **spill pillows or pads** or with other absorbents specifically designed for solvents. Spill pads backed with a vapor barrier are available from most safety supply companies. Before resuming work, make sure the spill has been adequately ventilated to remove flammable vapors.
2. *Volatile Toxic Compounds:* Use appropriate absorbent material to control the extent of the spill. Spill pillows or similar absorbent material usually work best because they do not have the dust associated with cat litter or vermiculite. Place all used absorbent materials in heavy-duty poly bags. Seal the bags, label them and hand them over to the Safety Manager, 2273. Again, make sure the spill area has been adequately ventilated before resuming work.
3. *Direct Contact Hazards:* Carefully select suitable personal protective equipment. Make sure all skin surfaces are covered and that the gloves you use protect against the hazards posed by the spilled chemical. Often it is a good idea to wear two sets of gloves: one as the primary barrier, the second as a thin inner liner in the event the primary barrier fails. When the cleanup is complete, be sure to **wash hands** and other potentially affected skin surfaces.
4. *Mercury Spills:* Mercury spills rarely present an imminent hazard unless the spill occurs in an area with extremely poor ventilation. The main exposure route of mercury is via vapor inhalation. Consequently, if metallic mercury is not cleaned up adequately, the tiny droplets remaining in surface cracks and crevices may yield toxic vapors for years.