

Hazardous Chemical Spill Cleanup Guidelines

The following guidelines are offered to help you decide if you should clean up a chemical spill.

Who Cleans Up the Spill?

You Clean Up the Spill

For chemical spills which do not involve injury, that do not represent a fire or life hazard, that are less than one gallon, and for which you have the proper training and proper personal protective equipment to do the cleanup, you clean up the spill. If there are any questions concerning a particular spill situation, contact EHS.

We Clean Up the Spill

For all other chemical spill situations, including those for which you have any questions or doubts about your ability to clean up the spill, call Environmental Health and Safety (EHS) at 292-1284. The situation will be evaluated and a proper response will follow. After hours, call 911. Report all injuries, fires, explosions, and potential life-threatening situations first to 911, then to EHS. If the chemical spill is too large for the University Spill Response Team to clean up, the Columbus Fire Department HazMat Team and/or private contractors will be called in to handle the cleanup procedures.

Planning For Chemical Spill Emergencies

1. Prepare a Telephone Emergency Sheet. The sheet should contain the following information and should be posted by each telephone.
 - Name and phone number of any on-site emergency personnel.
 - Emergency telephone number: 911
 - Environmental Health and Safety telephone number: 292-1284

- Location of the fire extinguishers.
 - Location of the spill control equipment.
 - Location of the fire alarm.
2. Train all employees in chemical spill procedures when they are first hired and periodically thereafter. Document training and have the employee and supervisor sign the documentation form to certify that the training was given. Keep the certification forms on file.
 3. You can aid EHS by drawing a map of your lab or service area and clearly labeling where chemicals and waste chemicals are stored. Fire extinguishers, eyewashes, spill kits, exit routes, and any additional hazards should be clearly marked. Keep a copy of the map in the main office of your department and send a copy to EHS. If an emergency does occur, your main office or EHS could provide advance warning to emergency response personnel of hazards in the room. Update these maps whenever chemical management practices change in the room.

Hazardous Chemical Spill Cleanup Guidelines

Chemical spill or hazardous materials emergency situations should be handled as a fire emergency. Initial response in a fire situation can be summarized as RESCUE, CONFINE, REPORT, SECURE, and CLEANUP (FIGHT FIRE). These principles can also be applied to a hazardous materials spill situation.

RESCUE

Just as you are not to reenter a burning building, do not go back in to an area where a chemical spill has occurred. In many documented cases, rescuers not wearing proper protective equipment have been overcome by toxic or asphyxiating fumes trying to rescue other victims and died as a result. Do not make this mistake.

As you leave an area involved in a chemical spill,

assist people exiting the area.

- * Evacuate personnel from the spill area.
- * Direct personnel to the nearest fire exit. Do not use the elevators.
- * Attend to victims.

First Aid

- * Remove victim from spill area to fresh air (but do not endanger your own life by entering areas with toxic gases).
- * Immediately remove contaminated clothing.
- * Wash skin with water.
- * Flush skin and/or eyes with water for at least 15 minutes.
(You may not feel any immediate effect from a chemical spill, but it is important to wash quickly and thoroughly because many chemicals can cause severe tissue damage which is not apparent until hours later.)
- * Get medical attention for victims.

Chemical spills over large body areas

- * Remove contaminated clothing while under a shower.
- * Flood affected body area with water for 15 minutes.
- * Resume water wash if pain returns.
- * Wash off chemicals with water; do not use neutralizing chemicals, creams, lotions, or salves.
- * Make sure medical personnel understand exactly what chemical is involved.

CONFINE

- * Close all doors.
- * Isolate area.
- * Establish exhaust ventilation if possible.
- * Open windows if possible without exposing yourself to the fumes.

REPORT

Call 911:

- * for spills that involve injury requiring medical treatment.
- * for spills that involve fire or explosion hazards.
- * for spills which are potentially life threatening.
- * for all chemical spills after work hours (4:30 PM - 7:30 AM).

Call EHS at 292-1284:

- * for chemical spill situations that do not require 911 assistance.
 - * for spills of one gallon or more of any chemical, or any quantity of a highly reactive or toxic material.
 - * for spills of an unknown chemical.
 - * for spills that you do not have proper training or proper personal protective equipment to do the cleanup.
 - * for spills for which you have any questions or doubts about your ability to clean up the spill.
- When calling EHS the following information will be requested:

- * Your name, telephone number, and location.
- * Location of the incident.
- * Time and type of incident.
- * Name and quantity of the material involved.
- * The extent of injuries, if any.
- * The possible hazards to human health or the environment outside the facility.
- * Other hazards that may be encountered in the area, such as large quantities of stored chemicals (particularly oxidizers, flammables, and air-borne toxic or irritant materials), radioactive materials, biohazards, etc.

SECURE

Until emergency responders arrive on the scene, you, your staff, and your building emergency officers will have to block off entrances to the spill site and prevent people from entering the contaminated area.

- * Lock doors leading to the chemical spill and post signs on the doors warning of the spill (if necessary).
- * Post staff at commonly used entrances to the spill site, so they can warn people to use other routes.
- * For any large outdoor chemical spill, keep people upwind and uphill from the site.

CLEANUP

Based on the chemical spill situations described in Who Cleans up the Spill section, decide who will do the cleanup. If you are going to do the cleanup, follow the procedures listed in the "What to do When You Clean Up a Spill" section.

What To Do When You Clean Up A Spill

If you have proper training, proper personal protective equipment, and the proper materials to absorb and clean up your chemical spill, and no one has been injured, the spill is contained, and the spill is not life threatening or a fire or explosion hazard, then follow the following procedures:

1. With the exception that you do not need to report the incident to 911 or EHS, perform all the procedures in the RESCUE, CONFINE, REPORT, and SECURE sections above.
2. When cleaning up the spill yourself, locate the spill kit.
3. Choose appropriate personal protective equipment.
 - Always wear protective gloves and goggles.
 - If there is a chance of body contact, wear an apron or coveralls.
 - If the spill is on the floor, wear protective boots or shoe covers.
 - * If there are inhalation hazards, wear a respirator. If a respirator is used, the person wearing the respirator must meet all of the requirements set forth in 29 CFR 1910.134. (These include but are not limited to fit testing and medical exams.

4. Remove ignition sources.

- Turn off hot plates, stirring motors, and flame sources.
- Shut down all other equipment.
- If unable to shut off sources of ignition, notify the emergency responders.

5. Confine or contain the spill.

- Cover with an absorbent mixture.
- Clean up minor spill with paper towels or a sponge if they will not react.
- Sweep solid materials into a dustpan, and place in a sealed container.
- If it is an acid/base spill, first add a neutralizing agent.

Small amounts of inorganic acid/base:

- * Use a neutralizing agent and then absorbent material.

Small amounts of other materials:

- * Absorb with non-reactive material (e.g. vermiculite, sand, towels, Floor-Dri).

Large amounts of inorganic acid/base:

- * Neutralize and call for help.

Large amounts of other materials:

- * Make a judgment call, dependent upon the amount, toxicity, and reactivity; you may handle it yourself or call for help.

6. Spills that require special handling:

Acid chlorides:

- * Use Oil-Dri, Zorb-all, dry sand, etc.
- * Avoid water and sodium bicarbonate.

Mercury:

- * Small spills (broken thermometer and smaller quantities of mercury), use an aspirator bulb or suction device. Then mop with mercury decontaminating powder solution (saturated HgX in water or other commercially available products).
- * For (1) larger spills than a broken thermometer, (2) any spill in an oven or

heated area, and (3) spills in small unventilated rooms, call EOHS and ask for mercury vapor monitoring.

Alkali metals:

- * Smother in dry sand.
- * Put in a hood.
- * If possible, dispose of by slow addition of isopropanol.

White (Yellow) Phosphorus:

- * Blanket with wet sand or wet absorbent.

7. Remove absorbent material with a broom and dustpan.

- * Place in a plastic bag or other appropriate container.
- * If the spilled chemical is a volatile solvent, transfer the plastic bag to a fume hood for storage until the material can be picked up.
- * If a material is a non-volatile, hazardous chemical, dispose of the material as a hazardous chemical waste.
- * If the spilled material is a non-volatile, non-hazardous chemical, contact EOHS to determine the appropriate disposal method.

8. Wet mop the spill area.

Comments

Questions arise as to what constitutes a large spill requiring EHS or other parties to cleanup or oversee the cleanup procedures and what are the limitations of commercially available spill cleanup kits. A large chemical spill can be as small as a few milliliters if the material is a highly volatile, toxic, or reactive compound spilled in a confined space. Many times you will have to make a professional judgment as to the severity of the spill. When in doubt, you can always call EHS at 292-1284 for advice.

Chemical spill cleanup kits are a must in the laboratory and other service areas that use chemicals. The kits are very useful if you and your fellow

workers know how to use them properly. Chemical absorbents or neutralizers can be used quickly and effectively to contain a spill. Use these items if your personal safety is not in jeopardy. If in your judgment a respirator is necessary to clean up the spill, secure the room and call EHS to aid in the spill clean up.

Be aware of the fact that while you may be in a well ventilated room, the Lower Explosion Limit (LEL) of a chemical may be reached at the surface of the spill and you want to avoid any sparks or sources of ignition when doing the cleanup. The protective equipment in a spill kit will not protect you from a flash fire. Many times the best way to handle the spill of a highly volatile compound, such as diethyl ether or chloroform, is to open the windows and fume hoods, leave the room and close the doors, and let the room air out. In these cases, call EHS at 292-1284, so they can send someone to monitor the situation. If in your professional opinion, there is a strong risk of fire or explosion, call 911 and EOHS for fire department backup, pull the building alarm, and evacuate the building. In most cases of a chemical bottle breaking in a laboratory, you will not need to call the fire department.

Do not forget that any person who needs to wear a respirator must be fit tested, have a medical exam, and meet the requirements of 29 CFR 1910.134.