

Laboratory Spill Response Guidelines

All laboratories should have a written emergency plan, a spill kit to contain and/or clean, documented training in spill response and a broken glass receptacle. At a minimum a chemical spill kit should contain:

- A 5 gallon bucket with a closeable lid
- Absorbent (vermiculite, cat litter or other multi-purpose absorbent)
- Scoop
- Small broom
- Required PPE (if not already available in the lab)

A few additional items that may be useful in a spill kit but are not required are:

- pH paper
- Sponge
- Small plastic zipper bags
- Sodium bicarbonate (for acid spills)
- Citric acid or boric acid (for base spills)

Additional information can be found in the A-State Laboratory Safety Manual, Biological Safety Manual and the Radiation Safety Manual.

When in doubt or if you have any questions, do not hesitate to reach out the department of environmental, health and safety at 870-972-2862 or 870-972-3644.

Biological

Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. Wait 30 minutes prior to initiating spill clean up to allow aerosols to settle or be removed by the ventilation system.

BSL 1 Level Spill

- Wear disposable gloves.
- Soak paper towels in disinfectant and place over spill area.
- Place towels in plastic bag for disposal.
- **Clean spill area with fresh towels soaked in disinfectant.**

BSL 2 Level Spill

- Alert people in immediate area of spill.
- Put on protective equipment.
- Cover spill with paper towels or other absorbent materials.
- Carefully pour a freshly prepared 1 in 10 dilution of household bleach around the edges of the spill and then into the spill. Avoid splashing.

- Allow a 20-minute contact period.
- Use paper towels to wipe up the spill, working from the edges into the center.
- Clean spill area with fresh towels soaked in disinfectant.
- Place towels in a plastic bag and decontaminate in an autoclave.

Chemical

In the event of a chemical spill, the first priority shall be personnel decontamination. Any personnel that have been exposed to hazardous chemicals on the skin or in the eyes should use the emergency eyewash or safety shower as soon as possible. If no one has been exposed or all exposed personnel have been adequately treated, the next priority shall be containment of the spill to keep it from leaving the immediate area. Once the spill is contained, the last step is clean up. Whether or not lab workers can clean up a hazardous chemical spill will depend on the type of chemical that has been spilled and the quantity. No lab worker should attempt to clean up a spill that they do not feel comfortable cleaning. Below are some basic criteria for determining whether or not you can clean up a chemical spill.

Spills that can be cleaned up by lab personnel

OSHA defines these types of spills as incidental spills. Lab personnel may clean up a hazardous chemical spill if:

- The quantity of spilled chemical is small (less than one liter).
- The chemical is known.
- The chemical is not a highly hazardous chemical or a chemical that may require respiratory protection.
- The personal protective equipment required to clean up the spill safely is available.
- The materials to clean up the spill are available.
- The hazards presented by the chemical are well understood.

If all of these criteria are met, then lab personnel may first contain the spill and then clean up the spill. Spill cleanup materials shall be placed in a container and labeled as chemical waste. Fill out the waste request form available on the EHS website to have the materials removed from the lab

Spills that require EHS assistance

Some spills may not require a HAZMAT team response but may be outside the scope of cleanup by lab personnel. A hazardous chemical spill that may require EHS assistance includes:

- A spill that is greater than 1 liter but less than 5 gallons (20 L).
- A small spill of a highly hazardous material inside a chemical fume hood.

In these cases, lab personnel must make sure the spill is contained and keep others out of the area until the spill is cleaned up by EHS personnel.

Spills that require HAZMAT response

Some spills are too large or too dangerous for lab personnel or EHS to handle. Outside assistance is required in these cases. A hazardous chemical spill that may require a HAZMAT team response includes:

- A spill larger than 5 gallons (20 L.)
- A spill that cannot be contained to the site (may leave the university).
- A spill of a highly hazardous chemical outside of a chemical fume hood or other containment device.

The procedure for responding to this type of spill is given below.

- 1) Evacuate the immediate area.
- 2) If a person or people became contaminated during the spill, take them to the nearest safety shower that is outside the immediate area where the spill occurred. The person or people should remove contaminated clothing and remain under the shower for 15 minutes if the area is safe to do so. While one person should remain with each person that is placed under the shower, all others should evacuate the building.
- 3) Pull the fire alarm to indicate evacuation of the building.
- 4) Do not shut down the HVAC system. The areas most likely to have a spill are those where the HVAC system will be pulling contaminant away from the office areas. A shutdown of the HVAC system will upset that balance.
- 5) Notify the local authorities (including the fire department) that this is a chemical spill, not a fire so that the local hazmat team can be dispatched.
- 6) Notify the EHS director after the local authorities have been contacted.
- 7) If the constituents of the spill are known, provide the SDS for each constituent to the hazmat team.
- 8) Once the local authorities give the all clear to return to the building, EHS shall do a quick building check to make sure critical operations are again online before allowing all others to re-enter.

Spills of unknown material

All of the above scenarios assume that the material spilled is known. The procedure for spills of unknown materials is given below.

- 1) Evacuate the immediate area and close the door to the area.
- 2) Post a sign that indicates the area must not be entered until the spill is cleaned.
- 3) Attempt to determine the materials in the spill by asking others that work in the area.
- 4) If that exact nature of the spill cannot be determined, consult EHS.

- 5) Try to determine if the spill could be a material that is unsafe to clean up. In other words, if there is no possible way it is a highly hazardous material then EHS should be able to safely clean up the spill.
- 6) If there is the possibility that the spill is a highly hazardous material and the nature of the spill cannot be determined, it will be necessary to contact the local authorities. If this happens to be the case, follow steps 3-8 of the procedure for a large chemical spill.

Radiation Spill

Spreading of radiation beyond the spill area can easily occur by the movement of personnel involved in the spill or cleanup effort. Prevent spread by confining movement of personnel until they have been monitored and found free of contamination. A minor radiation spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other radiation spills are considered major.

Minor Radiation Spill

- Alert people in immediate area of spill.
- Notify Radiation Safety Officer (870-972-3644 or 911).
- Wear protective equipment, including safety goggles, disposable gloves, shoe covers, and long-sleeve lab coat.
- Place absorbent paper towels over liquid spill. Place towels dampened with water over spills of solid materials.
- Using forceps, place towels in plastic bag. Dispose in radiation waste container.
- Monitor area, hands, and shoes for contamination with an appropriate survey meter or method. Repeat cleanup until contamination is no longer detected.

Major Radiation Spill

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.
- Have potentially contaminated personnel stay in one area until they have been monitored and shown to be free of contamination.
- Call Radiation Spill Emergency Response number (870-972-3644 or 911).
- Close doors and prevent entrance into affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.