

Spill Management Procedure

At Texas A&M University – Texarkana, individuals are responsible for their own spills. Each hazardous material user must be ready and equipped to handle a spill. Critical elements for a safe and effective response are: information and knowledge of materials used, adequate spill response supplies, adequate training, and knowing when and who to call for assistance.

The Lab Standard and Right-to-Know Programs require emergency and spill response training. When preparing your response plan consider the location, existing ventilation, and nature of potential spills. EHS is available for guidance and training to facilitate your response planning.

Resources

In the event of a spill, consult the following documents for information about spill and emergency response:

- Safety Data Sheet's (SDS)
- Process – specific standard operating procedure

Spill Kits

Stock the area with spill cleanup kits to clean up minor spills of commonly used chemicals. The kits contain:

- Instructions for use
- Absorbents
- Reactants
- Personal protective equipment (PPE)

Kits can be purchased through all laboratory safety vendors. Each laboratory is required to have an adequate number of spill kits available. There should be enough spill remediation supplies within a laboratory to contain their biggest chemical volume present.

Note: Do NOT use cat litter to clean up spills. It is NOT efficient absorbent material and will increase the amount of waste material.

Procedure: Responding to a Minor Chemical Spill

- Notify all individuals in the general vicinity that a spill has occurred
- Isolate the area and keep other personnel out of the contaminated area
- If spilled material is flammable, turn off ignition and heat sources
- Avoid breathing vapors from spill, and if possible, open outside windows
- Do you have the training equipped to clean up the spill?
 - If NO, call **911** and go to step 11
 - If YES, then go to next step
- Put on personal protective equipment (PPE), including:
 - Safety goggles
 - Gloves
 - Long-sleeve lab coats
- Confine spill to as small an area as possible
 - Do NOT wash spill down the drain
- Use appropriate spills kits or absorbents to neutralize corrosives, absorb the spill, or both.
 - For powdered chemicals, use one of the following methods to clean up the spill:
 - Sweep carefully to avoid generation of dust
 - Use moist absorbent pads
 - Wet the powder with a suitable solvent and wipe with a dry cloth
- Collect contaminated materials and residues and place them in a container
- Clean the spill area with water
- Notify Pi/Supervisor

Procedure: Responding to a Minor Chemical Spill

A major chemical spill is one that CANNOT be cleaned up safely without the assistance of EHS and emergency personnel.

Note: For major spills or significant areas of contamination, call 911.

Resources

In the event of a spill, consult the following documents for information about spill and emergency response:

- Safety Data Sheet's (SDS)
- Process – specific standard operating procedure

Procedure: Responding to a Major Chemical Spill

- Attend to injured or contaminated personnel and remove them from exposure
- Notify all individuals in the general vicinity that a spill has occurred
- Evacuate the area
- If spilled material is flammable, turn off ignition and heat sources
- Call **911**
- Close doors to affected area
- Post warnings to keep personnel from entering the area
- Have a person with knowledge of the incident and area available to assist emergency personnel
- Were there any illnesses or injuries as a result of the incident?
 - If YES, contact your PI/supervisor or EHS for proper injury notification

Procedure: Responding to a Spill Near a Drain or on a Permeable Surface

The purpose of this procedure is to prevent chemical and other material from entering storm drains, groundwater, detention and retention ponds, and any and all other bodies of water.

- Notify all individuals in the general vicinity that a spill has occurred
- Isolate the area and keep other personnel out of the contaminated area
- Notify PI/supervisor
- Do you have the training and equipment to clean up the spill?
 - If NO, call **911**
 - If YES, then
 - Large material spills
 - Block drains that could be impacted by the spill using:
 - Spill absorbent materials
 - Drain plugs
 - Berms
 - Small material spills
 - Clean up spill using
 - A chemical spill pad, pillow, and/or absorbent
 - Other material spills
 - Clean up spill using
 - Sawdust
 - Vermiculite
 - Oil-dry
- Collect spilled material into containers to prevent them from entering a storm or sanitary drain or from evaporating

- Place the materials used to clean up the spill, such as debris and personal protective equipment (PPE), in a sealed container
- Label all containers
- Were there any illnesses or injuries as a result of the incident?
 - If YES, contact your PI/supervisor or EHS for proper injury notification

How to Respond to Spills:

Step 1: Attend to Personal Injuries	Step 2: Assess the Risk	Step 3: Initiate Action
<p>Clothing on fire: Roll person on floor to smother flame, drench with water if immediately available.</p> <p>Splash in eyes: Immediately rinse eyes with water continuously for 15 minutes. Forcibly hold eye open to rinse behind eyelids. Obtain medical attention.</p> <p>Spill on body: Remove contaminated clothing and flood exposed area with running water from faucet or safety shower for 5 minutes. Make sure spill has not accumulated in shoes.</p> <p>For biological spills: wash exposed area with soap and water.</p> <p>Minor cuts and puncture wounds: Wash vigorously with soap and water, bandage wound, seek medical help if necessary.</p>	<p>Major spills meet any one of these criteria:</p> <ul style="list-style-type: none"> • spreads rapidly • requires rescue of personnel • endangers people or the environment • presents an inhalation hazard • has created significant contamination for personnel (radioactive materials) <p>Simple spills meet all these criteria:</p> <ul style="list-style-type: none"> • do not spread rapidly • do not endanger people or the environment except by direct contact • can be managed safely by people trained to use the material 	<p>Major spills</p> <ul style="list-style-type: none"> • dial 911 • activate alarm, evacuate, and assemble at a safe distance • account for people; warn others not to enter • wait for and provide information to responders <p>Simple spills</p> <ul style="list-style-type: none"> • keep the area clear • notify any affected people • plan and initiate cleanup • call EHS for advice, if needed

Types of Spills

Chemical

- Isolate the spill area and alert others in the area.
- Determine identity of spilled material and consult SDS to determine potential hazard(s).
- Avoid breathing vapors, get as much fresh air into area as you can safely.
- Establish ventilation to the outside if safe to do so and action does not spread the contaminant through the building.

- Use absorbents and neutralizing agents that are compatible with chemical spilled.
- Prevent spilled chemicals from going down drains to avoid affecting the environment.
- Dispose of cleanup materials as chemical hazardous waste; small volumes (<100ml) of dilute acids and bases may be neutralized (pH 6-8) and properly disposed of.
- Call EHS at 903-334-6794 for any spill management guidance

Simple Spills – Liquid

- Alert people in area
- Wear personal protective equipment (PPE)
- Contain by diking with appropriate absorbent
- If flammable, remove ignition sources (burners, motors, anything that could cause a spark); use plastic or nonmetallic cleanup equipment
- Absorb or neutralize with appropriate agent working from outside edges inward; sorbents do not remove toxic or flammable hazards; neutralization can produce heat causing boiling and splattering
 - acid—use sodium bicarbonate or acid spill kit
 - base—use sodium bisulfate, citric acid, or base spill kit
 - formaldehyde--absorb or polymerize

Simple Spills – Solid

- if not water reactive, dampen to prevent airborne dust
- control water reactive dust with sweeping compound
- carefully brush solids into a dust pan or container
- keep dust generation down to prevent creating inhalation hazard

Compressed gas leak—simple (presents no or only minimal inhalation or fire hazard)

- remove ignition sources
- restrict access
- place in or next to fume hood if possible; tighten fittings
- locate leak with soapy water (at below freezing temperatures use 50% glycerin solution)
- if cylinder still leaks, contact supplier

Compressed gas leak – major

Large or uncontrollable leak or fire hazard, involves acutely toxic gas, and/or more than minimal personal risk

- alert others to evacuate
- call 911
- turn off ignition sources
- leave fume hoods running; ventilate the affected area prior to leaving the area (only if it can be done safely and only to the outside)

- evacuate; assemble in a remote location; account for people
- provide information to emergency responders

Mercury

Large or heated spills can be an inhalation hazard

- isolate area to prevent tracking
- wear gloves and shoe covers (if on floor)
- consolidate and collect droplets using scraper, cardboard, wet paper towel, aspirator bulb, tape or special sponge.
- place all waste in sealed container; contact EHS at 903-334-6794 for hazardous waste pickup

Note: *For major spills of mercury, evacuate immediately and call 911*

Radiation Spill Response

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 Spills

- Alert people in immediate area of spill.
- Call **911**, radiation safety officer, and EHS.
- 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 Spills

- 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 **911**, radiation safety officer, and EHS.
- Close doors and prevent entrance into affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Biological Spill Response

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 and Material Fires

Small fires can be extinguished without evacuation. However, an immediate readiness to evacuate is essential in the event the fire cannot be controlled. Fire extinguishers should be used only by trained personnel. Never enter a room that is smoke filled. Never enter a room containing a fire without a backup person. Never enter a room if the top half of the door is warm to touch. Always dial 911 to ensure the Fire Department is notified of any fire even if it is minor and has been successfully extinguished.

Minor Fire

- Alert people in laboratory and activate alarm.
- Smother fire or use correct fire extinguisher.
- Aim extinguisher at base of fire.
- Always maintain accessible exit.
- Avoid smoke or fumes.

Minor Fire

- Alert people in area to evacuate.
- Activate nearest fire alarm or call Fire Emergency Response number.
- Close doors to confine fire.
- Evacuate to safe area or exit building through stairwell; do not use elevator.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Personal Injury Response

Hazardous Material Splashed in Eye

- Immediately rinse eyeball and inner surface of eyelid with water continuously for 15 minutes.
- Forcibly hold eye open to ensure effective wash behind eyelids.
- Obtain medical attention.
- Report incident to PI/supervisor and EHS.

Radiological Spill on Body

- Remove contaminated clothing.
- Rinse exposed area thoroughly with water.
- Obtain medical attention, if necessary.
- Report incident to PI/supervisor, EHS and Radiation Safety Officer.

Chemical Spill on Body

- Flood exposed area with running water from faucet or safety shower for approximately 15 minutes.
- Remove contaminated clothing at once.
- Make sure chemical has not accumulated in shoes.
- Obtain medical attention, if necessary.
- Report incident to PI/supervisor and EHS.

Emergencies Involving Fire on Clothing

- Roll person around on floor to smother flame, or drench with water if safety shower is immediately available.
- Obtain medical attention, if necessary.
- Report incident to PI/supervisor and EHS.

Biological Spill on Body

- Remove contaminated clothing.
- Wash exposed area with soap and water for approximately 15 minutes.
- Obtain medical attention, if necessary.
- Report incident to PI/supervisor and EHS.

Minor Cuts and Puncture Wounds

- Wash injury with soap and water for several minutes.
- Obtain medical attention.
- Report incident to PI/supervisor and EHS.

REVISION STATUS

CONTACT(S)	IMPLEMENTATION DATE	COMMENTS
Heather Vogt, EHS Manager	May 2022	Created procedure