

Emergency Response to Waste Spills

There are numerous different chemical, biological, and radioactive hazardous materials used throughout Stephen F. Austin State University on a daily basis. These chemicals are used in a variety of settings such as laboratories, research settings, building maintenance operations, construction/renovation projects and so forth. The range of individuals using chemical substances at the University also varies greatly from students, faculty, staff, and contractors. Each hazardous material user should educate themselves with the specific hazardous material that he/she plans to work with, and consider response options in case of a spill or release *beforehand*. With the high level of chemical, biological, and radioactivity (i.e. laboratory use, plant operations functions, etc.) around the campus there is a high probability that a “spill” will occur. These general controls are designed to aid the user in responding to spills in which the user has a thorough knowledge of the hazardous substances and there is no immediate threat to the safety and health to the user or others in the vicinity.

However in the event of a spill or release of any compound that the user cannot control, or has any concerns about controlling, he/she should immediately call for assistance. During regular business hours Monday through Friday from 8:00am to 5:00 pm call the Environmental Health, Safety, and Risk Management Department directly at 468-4532.

Any other time call the SFASU Police at

Emergencies 911

Non-emergencies 468-2608

Chemical Spill Procedures

It is the responsibility of each individual using a hazardous material to become familiar with the emergency response procedures, if any, which govern his or her facility. The Material Safety Data Sheet for the chemical is a good source for specific information.

The following general rules should be followed in the event of a major (i.e. greater than 5 gallons of a typical solvent; much less for more toxic materials) hazardous materials spill or other emergency.

Chemical Emergency Steps

a. ACTIVATE EVACUATION (FIRE) ALARM, IF NECESSARY, FOR THE BUILDING

Be familiar with the sound of the alarm system in your facility. If the incident could threaten the health of individuals in the building activate the alarm.

b. CALL FOR HELP, AND CALL THE UNIVERSITY POLICE, IF NECESSARY, AT 911

Get as much information as you can about the chemical. If possible, locate a Material Safety Data Sheet (MSDS). Be sure the SFASU Police have been accurately informed as to the nature and location of the spill, and whether there are injuries requiring the assistance of an ambulance. University Police will contact the Environmental Health, Safety and Risk Management Department.

c. ATTEND TO LIFE-THREATENING INJURIES

The primary concern in the event of an emergency is to protect the life and health of others.

d. PREVENT ACCESS TO THE AREA

Barricades of some sort should be set up to prevent inadvertent access to the area of the spill. This action may be necessary to prevent injury and to control the spread of contamination.

e. CONTAIN THE SPILL TO PREVENT RELEASE TO THE ENVIRONMENT

If the spill can be safely contained, prevent release to the sanitary sewer system, the storm sewer, and/or the ground. Do not jeopardize your own safety.

f. INITIATE MATERIAL SPECIFIC CLEAN-UP PROCEDURES

The Environmental Health, Safety, and Risk Management Department will assist in spill clean up. However, accountability for the spill and disposal of spill residue belongs to the individual or department.

Spill Prevention and Control: Standard Operating Procedure

This procedure provides information for spill prevention, control and cleanup at the Stephen F. Austin State University.

Definitions:

- a. Hazardous Chemical - Any chemical substance that presents a health or physical hazard, and/or is listed in the following:
 - 1. CERCLA – Comprehensive Environmental Response Compensation and Liability Act. The Superfund for the cleanup of listed sites.
 - 2. RCRA - Resource Conservation and Recovery Act. The Environmental Protection Administration (EPA) hazardous waste regulations.
- b. Health Hazard - Human exposure to chemicals that are suspected carcinogens, toxic agents, irritants, sensitizers, and agents that may damage human tissue.
- c. Physical Hazard - Exposure to chemicals when any of the following hazards are present: explosive, flammable, compressed gas, oxidizer, reactive, or corrosive.
- d. Spill - Any unplanned release of a solid, liquid or gaseous chemical.
- e. A Release to the Environment - A spill or discharge that escapes beyond the confines of the building or structure, such as when materials reach the soil, surface water, or atmosphere.

Regulations

- a. All departments shall take proactive steps to ensure the prevention of hazardous chemical discharges into the environment.
- b. All chemical spills released into the environment should be reported to and evaluated by the Environmental Health, Safety, and Risk Management Department who will assist with the appropriate clean up response.
- c. The user department should clean up a spill that is not a release to the environment, small enough to be safely cleaned up and that might not require specialized equipment. (i.e., spills that do not pose a hazard beyond that which the users typically deal with should be cleaned by the user group). A spill that cannot be safely cleaned up by the user department shall be reported to the Environmental Health, Safety, and Risk Management Department.

* Note: If any quantity of hazardous material is spilled and makes its way to the environment (i.e. soil, water, air or storm sewer) it must be reported immediately to the Environmental Health, Safety, and Risk Management Department at 468-4532. The EHS&RM Department representative will contact the following agencies as necessary:

For all releases call:

Texas Commission on Environmental Quality (TCEQ), Austin

Environmental Release Hotline

1 (800) 832-8224

(512) 239-2507

(512) 463-7727

Questions 1(888) 777-3186

Texas Commission on Environmental Quality Region 10, Nacogdoches County

3870 Eastex Fwy

Beaumont, TX 77703-1892

(409) 898-3838

Fax (409) 892-2119

City of Nacogdoches Emergency Numbers

Hazardous Material Incident 559-2541

Emergency Management Office 559-2541

after hours 559-2607

Fire Department 559-2541

Water Utilities 559-5046

Health Department 559-2556

Public Works 559-2583

Chemical Transportation Emergency Center (CHEMTREC)

1 (800) 424-9300

* If there is a mercury spill of any type, it must be reported to the Environmental Health, Safety, and Risk Management Department immediately. A special procedure must be used to clean up this type of spill.

* Many acid/base spills require special clean up and neutralization procedures depending on what type of acid or base was spilled. This type of spill must also be reported immediately to the Environmental Health, Safety, and Risk Management Department at 468-4532.

- d. Each department should ensure that adequate proactive spill prevention and control procedures are in place. Materials to contain and absorb potential spills shall be provided where liquid chemicals are used or handled. The user will develop a cleanup procedure for spills not released into the environment.
- e. No employee will be assigned to work in an area where hazardous chemicals are stored and/or used until proper safety protective equipment is provided and the employee has been adequately trained.
- f. New construction and facility modification plans shall include proactive spill prevention and control provisions. The Environmental Health, Safety, and Risk Management

Department shall approve all plans that involve tanks or other bulk liquid storage or usage facilities.

1. Storage tanks shall meet all facility and operational requirements established by Stephen F. Austin State University.
2. Spill containment for tanks and piping shall meet the requirements of SFASU. Preventive measures will be determined after a review of the chemical's characteristics and risk to employees, the community, and the environment.

Spill Prevention, Control, and Counter Measures

1. Departments should store all chemicals in a manner that will ensure that a chemical spill does not occur through negligence or ignorance. All flammables should be stored inside a flammables cabinet. All acids and bases should be separated into their respective cabinets also. Reactive chemicals should be separated into hazard class according to their specific hazards. For example: store all pyrophorics together, all water reactives together etc.
2. Each area where hazardous chemicals are stored should have adequate lighting at all times.
3. All employees who handle or transfer hazardous chemicals in any manner should be trained in the proper handling and protection procedures for those specific chemicals.
4. Each department should create a spill kit. This kit should contain chemical absorbing wipes, acid and base neutralizers, mercury absorbent and mercury indicator, pH paper. It should also contain personal protective gear such as neoprene gloves, apron and face shield.
5. After a spill is reported to Environmental Health, Safety, and Risk Management Department, a Material Safety Data Sheet (MSDS) will be located on that specific chemical so the hazards associated with it can be evaluated. The spill cleanup measures will then be initiated from the MSDS spill and leak procedures section. If the chemical spilled is of an extremely hazardous nature, the Nacogdoches Fire Department will be called to assist with the situation.
6. The Environmental Health, Safety, and Risk Management Department will establish a safe perimeter around a spill and control access.
7. Contain spills to limit contamination of surrounding areas.
8. Clean up spill when appropriate and decontaminate area. Provide disposal in accordance with EPA procedures and statutes.
9. The Environmental Health, Safety, and Risk Management Department will report any impact that a building or facility will have on continued operations at Stephen F. Austin State University.

Spill Kit-General Spill Control Techniques

Chemical Spill Response Kit Expectations

1. Departments are responsible for creating and purchasing their own spill kits.
2. Personnel are expected to handle single chemical spills of up to 5 gallons.
3. Kits are small personal kits for first responders.
4. Personnel will handle chemical spills with two chemicals only after consultation with a chemist or the Environmental Health, Safety, and Risk Management Department.
5. The Environmental Health, Safety, and Risk Management Department or Nacogdoches Fire Department will handle all chemical spills with three or more chemicals involved.
6. If you do not understand how to use the kit or feel you need help, please contact the Environmental Health, Safety, and Risk Management Department at 468-4532.

Recommended Chemical Spill Kit Contents Sheet

<u>ITEM</u>	<u>QUANTITY</u>
5 Gallon Poly Pal	1
Sock/Boom, 3" x 4'	2
Spill Pillows, 2 liter	2
Disposal Bag	2
4H Gloves, Size 11	2 pair
Nitrile Gloves	2 pair
Tyvek QC Coveralls, XL	2
1 Quart Scoop	1
Scraper	1
4 lb. Citric Acid (for basic spills)	1
4 lb. Sodium Sesquicarbonate (for acidic spills)	1
5 lb. Vermiculite	1
Wipes	4
Litmus paper	1
Biohazard Bag	1
Biohazard Mask	2
Biohazard Gloves	4 pair
Biohazard Wipes	2
Hazardous Waste Label	2
Ziploc Bag	4
Safety Glasses	2

Helpful Hints When Using the Contents of a Chemical Spill Kit

- Get help and bring your chemical spill kit to the site. This is a two-person operation.
- The responsibility of the second person is to stay clean and to hand the materials in when necessary. This person is also to watch the area.
- Ask someone other than your chemical spill partner to call the Environmental Health, Safety and Risk Management Department if you do not feel comfortable or feel you cannot handle the spill alone.
- Put on Nitrile or 4-H gloves.
- Put on safety goggles.
- You may need to wear a respirator with special filters depending on what has been spilled. Read the MSDS (Material Safety Data Sheet) for the chemical spilled to see if this is necessary. A respirator is not supplied with the spill kit. A chemical resistant suit is for your protection when cleaning up a chemical spill.

Recommended Chemical Spill Kit Contents Sheet w/ Mercury Spill

<u>ITEM</u>	<u>QUANTITY</u>
5 Gallon Poly Pal	1
Sock/Boom, 3" x 4'	2
Spill Pillows, 2 liter	2
Disposal Bag	2
4H Gloves, Size 11	2 pair
Nitrile Gloves	2 pair
Tyvek QC Coveralls, XL	2
1 Quart Scoop	1
Scraper	1
4 lb. Citric Acid (for basic spills)	1
4 lb. Sodium Sesquicarbonate (for acidic spills)	1
5 lb. Vermiculite	1
Wipes	4
Litmus paper	1
Biohazard Bag	1
Biohazard Mask	2
Biohazard Gloves	4 pair
Biohazard Wipes	2
Hazardous Waste Label	2
Ziploc Bag	4
Mercury Shaker	1
Mercury Sponge	1
Small Jar	1

Helpful Hints When Using the Contents of a Mercury Spill Kit

- Inside the spill kit there should be a box marked Hg Absorb Sponges. These sponges are for small mercury spills only.
- Use the Hg Absorb Sponges to remove small droplets of mercury from surface areas.
- Activate sponges before use by moistening with a small amount of water.
- Place the sponge, rough side up, on a level surface. The rough side of the sponge contains the active material which will amalgamate mercury forming a silvery surface.
- Caution: Excessive water may reduce the ability of the sponge to pick-up mercury.
- Spread the water evenly with a gloved finger. After 1 minute the sponge is ready to use. Slowly move the sponge, activated side down, over the surface to be cleaned. The capacity of the sponge can be increased with a small amount of moistened Hg Absorb powder rubbed into the surface of the activated sponge.
- After finishing with the Hg Absorb Sponge, it should be stored in a plastic bag and disposed of properly.

Types of Spill Responses

Flammable liquids / organic solvents

There are many different organic solvents, most of which are flammable to some extent, used throughout the campus. If the spill is a flammable liquid or organic solvent:

- Use material in the spill kit marked Vermiculite. (Brown absorbent)
- Dike the spill and pour contents of the bag on the chemical spill.
- Completely cover the chemical, and allow the vermiculite to soak up the chemical completely.

If flammable, protect spill from spark and other sources of ignition.

Vermiculite can be used to contain (dike) a chemical spill and used to soak up flammable liquids.

Acid / Base Spills

Typically, acid and caustic spills can be neutralized. Simple neutralization will reduce a large portion of the hazardous materials incident into a nonhazardous state. This is the simple element of neutralization. There may be a significant amount of heat generated and gases released (e.g. carbon dioxide). The ideal process is to accomplish this in a relatively controlled and anticipated environment. The adaptable concept described below is for a small to medium size spill of one to five gallons. The format may be enlarged to embrace larger spills by adding additional supplies, equipment and personnel. Your unique situation may demand that you pre-plan how your department will react to small chemical spills. We recommend that you try to keep the plan and process as simple as you can. However, please note strong bases (e.g., sodium hydroxide and potassium hydroxide) should not be used in the neutralization process of strong acid. Likewise,

strong acids (e.g, hydrochloric acid and sulfuric acid) should not be used in the neutralization process of strong bases.

The first step is to determine the pH of the spilled substance. This can be done by using the pH paper in the chemical spill kit.

Using the pH paper

- Tear off a strip (3 to 4 inches long)
- Dip the pH paper into the liquid that has spilled
- Check the color chart that is located on the pH paper tape dispenser

If pH paper is **RED**

- Use material in the bag marked Sodium Sesquicarbonate.
- Dike the spill and pour contents of the bag on the spill.
- Cover the chemical completely.
- Leave the immediate area and wait 10-15 minutes to allow complete neutralization.
- Recheck the pH to see if neutralization has been reached. If not, repeat steps 1-4 until neutralization is complete. You want a pH between 6-9.

If pH paper is **BLUE**

- Use material in the bag marked Citric acid.
- Dike the spill and pour contents of the bag on the spill.
- Cover the chemical completely.
- Leave the immediate area and wait 10-15 minutes to allow complete neutralization.
 - Recheck the pH to see if neutralization has been reached. If not, repeat steps 1-4 until neutralization is complete. You want a pH between 6-8.

During chemical neutralization, heat and fumes may be given off. Once the chemical has started to react leave the immediate area for 15 minutes before returning.

Common Neutralization Reactions

Acidic Solutions

- Add (sodium sesquicarbonate) to solutions whose pH is between 0-6.
- Hydrochloric acid + sodium sesquicarbonate = heat + carbon dioxide + salt + water

Caustic or Alkaline Solutions

- Add (citric acid) to solutions whose pH is between 8-14.
- Sodium hydroxide + citric acid = heat + salt + water

Disposal

All Spilled Chemicals

Use the following instructions to clean up and dispose of any type of spilled chemicals.

- Scoop the material up into a big zip-lock bag or container.
- Dispose of all used gloves, chemical resistant suits, and other contaminated materials into bag also.
- Put red and white Hazardous Waste Label with contents and date on the disposal bag.
- It is the responsibility of the department to properly dispose of the waste generated due to the chemical spill.
- If possible, have area mopped after clean up.
- Fill out Chemical Incident Form located on the next page and attach this form to the container of spilled material and mail a copy to the Environmental Health, Safety and Risk Management Department (Box 6113).

CHEMICAL SPILL INCIDENT SHEET

Stephen F. Austin State University

TIME: _____ NOTIFIED BY _____

DATE: _____ PHONE: _____ DEPARTMENT: _____

EXACT LOCATION OF INCIDENT: _____
(Be specific)

TYPE OF CHEMICAL: Hg _____ Acid _____ Alkaline _____

FLAMMABLE LIQUIDS _____ BIOHAZARD _____ OTHER _____

SIZE: QT _____ 5 GAL _____ 55 GAL _____ OTHER _____

LIST SUPPLIES USED FOR CLEAN-UP: _____

SPECIAL PROBLEMS ENCOUNTERED _____

SIGNATURE _____

----- Environmental Health, Safety, and Risk Management Department Use
Only-----

TCEQ WASTE CODE _____ DISPOSED OF _____

EPA WASTE CODES _____ MANIFEST # _____