



HAZARDOUS MATERIALS MANAGEMENT PROGRAM

Section 6. Emergency Preparedness

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1.0 PURPOSE

The purpose of this section is to provide general guidelines for emergency preparedness and response.

2.0 **EMERGENCY EQUIPMENT**

2.1 **Eyewash and Shower Facility**

Emergency eyewash and shower equipment must be provided if the eyes or skin of an employee come in contact with a substance that can cause corrosion, severe irritation, permanent tissue damage, infection, or is toxic by absorption. They must also:

1. Be in accessible locations that require no more than 10 seconds to reach and cannot require the injured person to go through two doors, locked doors, or doors requiring more than one motion to open. NOTE: All passageways must be clear of obstacles (including temporarily parked chemical carts).
2. Be clear of any obstruction (i.e., do not hang lab coats or goggles on this equipment or store materials on or around it).
3. Have potable water and must operate as hands-free, continuous flow for at least 15 minutes.
4. Not have a chain to operate, but a rigid bar.

Eyewash stations and emergency showers are checked monthly by Facilities Management Services (FMS) to be certain they are functional. Occupants in County buildings are responsible for monthly checks.

Personal Eye Washes are **NOT** a substitute for plumbed eyewash stations. Eyewash units must be able to supply water for a minimum of 15 minutes.



2.2 **Fire Extinguishers**

Fire extinguishers are located in every building and are dry chemical (ammonium monophosphate), water, or carbon dioxide. The dry chemical and carbon dioxide extinguishers are ABC-rated. All fire extinguishers must be easily accessible. They are located by the exit door within each laboratory or just outside in close proximity.

2.3 **First Aid Kits**

First aid kits are recommended for all laboratory facilities. Individual research groups are responsible for purchasing, maintaining, and restocking of the kits. Refer to *Emergency Pamphlet* for suggested supplies.

2.4 **Spill Kits**

Spill kits are recommended to be on-hand only for employees that are trained in chemical spill clean-up. The kit shall be accessible. The following supplies are recommended:

1. Neutralizers. 2% hydrochloric acid for caustic spills and sodium bicarbonate for acid spills;
2. pH paper;
3. Absorbents. pillows, sheets and pads, Super Fine, cat litter, vermiculite;
4. Chelating agents;
5. Residue management:
 - a. whisk broom or hand-held brush
 - b. plastic dust pan
 - c. large, sealable plastic bags

- d. 5-gallon plastic drum liners
- e. 5-gallon waste disposal container with lid; and
6. Personal protective equipment (PPE):
 - a. chemical splash goggles
 - b. gloves
 - c. aprons
 - d. close-toed shoes

3.0 MEDICAL EMERGENCY

See [Emergency Pamphlet](#).

4.0 BUILDING EVACUATION

See [Emergency Pamphlet](#).

5.0 HAZARDOUS MATERIALS EXPOSURE

Outlined below are basic steps to follow in the event of a hazardous materials exposure. Seek medical attention for all exposures. Contact the Department of Public Safety, if exposure results in a medical emergency.

5.1 Chemical Exposure

5.1.1 Eye/Skin Contact

1. Immediately go to the emergency shower/eye wash facility and remove all contaminated clothing.
2. Flush affected body area with water for at least **15 minutes**.
3. Do not use neutralizing chemicals, creams, abrasives, or lotions.
4. If the eyes have been contaminated, forcibly hold them open and flush for least **15 minutes**.
5. Resume flushing area with water if pain continues.

5.1.2 Inhalation

1. Move exposed person to fresh air if safe to do so.
2. If victim is breathing, loosen victim's clothing and maintain the airway.
 - a. Lay victim flat on their back.
 - b. Place one hand under the neck and lift.
 - c. With the heel of other hand on victim's forehead, rotate or tilt the head backward into maximum extension.
 - d. If additional airway opening is required, it can be achieved by thrusting the lower jaw into a jutting-out position.
3. If the victim is not breathing, contact DPS, and perform CPR (if certified) until medical assistance arrives. Be careful to avoid exposure to chemical poisoning via mouth-to-mouth resuscitation. If available, use a mouth-to-mask resuscitator.

5.1.3 Ingestion

1. Contact DPS and request medical assistance.
2. If possible, determine what material was ingested by victim.
3. If victim begins to vomit, turn head or entire body to one side to avoid choking.

4. Do not induce the victim to vomit or drink any beverage unless instructed to by qualified medical personnel.
5. If victim stops breathing, see Inhalation, step 3.

5.1.4 Injection

Contact DPS and request medical assistance.

5.2 Biological Exposure

1. For eye or skin exposure to biohazardous materials, see Chemical Exposure: Eye/Skin Contact.
2. If contact to the skin is incidental, thoroughly wash the area with soap and water for at least **15 minutes**.
3. If clothing has been contaminated, remove and thoroughly wash the affected body area with soap and water for at least **15 minutes**.

5.3 Radiation Exposure

See [Radiation Safety Manual](#) for guidelines.

NOTE: A Supervisor's Report of Injury form and Workers Compensation form must be completed and submitted to the University's Workers Compensation group following the employee's injury or illness.

6.0 HAZARDOUS MATERIAL SPILLS

For all spill emergencies contact the Department of Public Safety (DPS).

In the event of a large chemical, biological, or radiation spill, follow these guidelines:

1. Notify everyone in the immediate area and the supervisor.
2. Evacuate personnel from the spill area.
3. Deny entry.
4. Alert other building occupants. NOTE: Evacuation of the building and its occupants may be necessary depending on the volume of chemical/biological material spilled and its relative hazard.
5. Notify DPS from a safe location and provide the following information:
 - a. Your name, telephone number, and location
 - b. Type of incident, location, and time of occurrence
 - c. Name and quantity of material involved, to the extent known
 - d. If victims are involved, relay the victim(s)' name(s) and extent of injuries, if any
6. If exposed to a hazardous spill, see 5.0 Hazardous Materials Exposure.

6.1 Chemical Spill Clean-Up

Chemical spill clean-up must not be attempted if the employee does not have the proper training and experience, the necessary spill kit supplies, and personal protective equipment. Contact DPS for large chemical spill clean-up.

6.1.1 Corrosive Liquids

1. Neutralize the spill. Apply neutralizer from a spill clean-up kit to the perimeter of the spill. If a spill clean-up kit is not available, sodium bicarbonate can be used on acid spills and 2% hydrochloric acid or citric acid powder can be used to neutralize caustic spills.

2. Mix thoroughly until fizzing and evolution of gas ceases. NOTE: It may be necessary to add water to the mixture to complete the reaction. Neutralizer has a tendency to absorb acid before fully neutralizing it.
3. Check mixture with pH strips or pH paper. Ensure that the final pH is between 6 and 10.
4. Once the chemical is completely neutralized, cover with an absorbent material (e.g. paper towels, pads, etc.)
5. Collect the absorbent and place it in a Ziploc bag.
6. Label the bag, place it in the fume hood and call EH&S immediately.

6.1.2 Other Hazardous Liquids

1. Prevent the spill from spreading by depositing absorbent material such as Super Fine, sand, or vermiculite (paper towels do not control the vapor release as well as sand) at its outer edges.
2. Cover the entire spill with the absorbent by working from the edge toward the center in a circular motion.
3. Mix the absorbent until it has absorbed all of the flammable liquid.
4. Collect the absorbent and place it in a Ziploc bag.
5. Label the bag, place it in the fume hood, and call EH&S immediately.

6.1.3 Solids

1. Solid material of low toxicity may be swept onto a dust pan and deposited into a Ziploc bag. Any powder clinging to the dust pan may be wiped with a lab tissue and the tissue disposed of in the Ziploc bag. Ensure that fine powder or dust from the spilled material does not become airborne.
2. Label the bag, place it in the fume hood and call EH&S immediately.
3. If the spilled material is highly toxic, contact EH&S or Laboratory Safety.

6.2 Biological Spill Clean-Up

6.2.1 Spills on Lab Bench, Floor, or Lab Equipment Causing Aerosolization

1. Evacuate area immediately.
2. Close all access doors to area.
3. Remove and dispose of contaminated lab coat, gloves, and other safety equipment before leaving.
4. Allow enough time (30 minutes or more) for droplets to settle before entering for decontamination.
5. Use PPE and respiratory protection while conducting decontamination of area. NOTE: To use respirators, medical monitoring and fit-testing are required. Contact EH&S for more information.
6. Use appropriate absorbents and chemical disinfectant. *See Section 2 for a list of disinfectants and the agents they control.*
7. Place all waste from clean-up inside red biohazard bags. Contact EH&S for pick-up.

6.2.2 Spills in a Biological Safety Cabinet (BSC)

1. Allow BSC to continue to operate.
2. Initiate clean-up at once.
3. Prevent additional aerosol generation and escape of contaminants from BSC by reducing unnecessary movement within the BSC.
4. Use appropriate disinfectant. NOTE: Vapors from flammable organic solvents can reach dangerous concentrations within a BSC.
5. Place all waste from clean-up inside red biohazard bags. Contact EH&S for pick-up.

6.2.3 Minimal Hazard Biomaterial with No Aerosolization

1. Use paper towels soaked with effective disinfectant to mop up the spill.
2. Use proper PPE when conducting clean-up.

6.2.4 Mixed Chemical and Biological Agent Spills

1. Confine spill to small area.
2. Avoid airborne release.
3. Follow protocol for chemical spills in the previous section.

6.2.5 Solid Biomaterial Spills

1. If solid material is of low toxicity, sweep material into a dust pan and place into an appropriate waste disposal container.
2. Sweep up after spraying with appropriate disinfectant and allowing sufficient contact time.

6.2.6 Radioactive Biological Material Spills

1. Evacuate area unless spill is contained within a chemical fume hood.
2. Remove contaminated clothing immediately.
3. If skin is exposed to the spill, wash contaminated area gently with mild soap and water.
4. For spills involving both an infectious agent and a radioisotope, inactivating the agent may be of primary concern.
5. Select proper disinfectant. Some disinfectants may cause additional hazards e.g. hypochlorite solution will oxidize radioactive iodide to radioactive iodine (I₂).
6. Apply disinfectant and allow sufficient contact time.
7. Determine the radioisotope and approximate quantity spilled.
8. Spill should be cleaned up in a way that will minimize the generation of aerosols or the re-entrainment of dusty materials.
9. See *Radiation Safety Manual* for radioactive spill clean-up procedures.

6.2.7 Centrifuge Tube Breakages

1. If breakage occurs while machine is running, turn the motor off and leave it closed for 30 minutes.
2. If breakage is discovered after the machine has stopped, replace the lid and leave for 30 minutes.
3. Complete an incident report.
4. Chemical resistant or utility gloves should be worn for all subsequent operations. Forceps should be used to pick up glass debris.
5. Place contaminated equipment in a non-corrosive disinfectant known to be effective against the organisms at use or autoclave.
6. The centrifuge bowl should be swabbed with the same disinfectant, washed with water, and dried.

6.3 Radiation Spill Clean-Up

See [Radiation Safety Manual](#) for guidelines.

7.0 FIRE and EARTHQUAKE

See [Emergency Pamphlet](#).

8.0 PROGRAM APPROVAL AND REVIEW

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