

SECTION 10

Emergency Prevention and Response

Laboratory instructors, aides, and other laboratory employees are to be familiar with emergency procedures in order to prevent and reduce the impact of laboratory accidents.

A. Standard Emergency Procedures

1. Emergency procedures should address a failure in the ventilation systems, evacuation and fire response, or the breakdown of other procedures to limit exposure of employees to hazardous chemicals. These emergency procedures should be established and should be posted in appropriate public places, and will include the following:
 - [a] Routes of egress from the laboratory.
 - [b] Procedures by which to notify appropriate individuals.
 - [c] Telephone numbers of fire, police, ambulance, and school authorities.
 - [d] Procedures for repair or correction of the problem that caused the emergency.
2. There should be a telephone in each laboratory, which should have access to an outside line, for the purpose of emergency response.
3. Specialized equipment such as self-contained breathing apparatus (respirators) require specialized training prior to use.
4. The laboratory should have a plan for everyone to follow if an evacuation is necessary. The employee should be sure that he/she knows the main and alternate routes, as well as the procedure for accounting for each person in the laboratory.
5. The employee should call for assistance if there is any doubt about his/her ability to handle an emergency. The most appropriate response to a serious fire is evacuation and subsequent action by the fire department.
6. Individual items of safety equipment and their proper use should be discussed in District and school procedures.

B. Specific Emergency Response Procedures

The employee is to follow procedures that have been established and practiced.

1. When helping another person, the employee should evaluate the potential danger to himself/herself before taking action. The following actions are recommended:
 - [a] Tell anyone in the area about the nature of the emergency.
 - [b] Do not move any injured persons unless they are in immediate danger from chemical exposure or fire.
 - [c] Keep victims warm.

[d] Report the nature and location of the emergency to the school office.

[e] Follow specific protocols identified for mercury spills to avoid further contamination of school and community. This protocol involves evacuating the area, zoning off the area, contacting Operations who will contact the Davenport Hazardous Materials Division.

C. First Aid

Suitable first aid equipment is to be available in the laboratory area: a general first aid kit, small bandages for minor cuts and abrasions, and perhaps a blanket.

Personal injury beyond the purely superficial requires professional medical treatment. Such treatment should be obtained by calling the Fire Department at 911.

The school should train laboratory teachers, instructors and aides in first aid so they can render assistance until medical help can be obtained. The training should occur during contracted hours, and at no cost to the employees.

D. Emergency Equipment

The School District, Chemical Hygiene Personnel, and laboratory instructors are to ensure that adequate emergency equipment is available in the laboratory and inspected periodically to ensure that it is functioning properly. Laboratory personnel should be properly trained in the use of each item. Students should also be instructed to use a safety equipment. Safety equipment that should be available in the laboratory include:

1. Eyewash fountain
2. Fire extinguisher of an appropriate type
3. Safety drench shower
4. Telephone with access to outside phone line
5. Identification signs

Refer to the Classroom Safety Audit Form in Appendix F.

E. Fire Response

1. Fire Prevention: The best way to fight a fire is to prevent it. Fires can be prevented or their severity considerably reduced by proper housekeeping and by thoughtful reflection about what is being done. This includes the prompt removal of waste, separation of flammable liquids from combustible material, storage of only limited quantities of flammable material, and the maintenance of unobstructed aisles and exits.
2. Dealing With a Fire: When a fire occurs, the following actions should be followed, *depending on its severity*:
 - [a] A small fire fed by a constant supply of fuel, such as a propane fire, can usually be extinguished by turning off the source of fuel.

- [b] A fire contained in a small vessel should be suffocated by covering the vessel. The vessel should not be picked up, nor covered with dry towels or cloths.
 - [c] Nearby flammable materials should be removed to avoid spread of the fire.
 - [d] If a fire burns over a larger area, all persons should evacuate the area, except those trained and equipped to fight structural fires.
 - [e] For a significant fire, the fire alarm should be activated and the Fire Department called.
 - [f] The fire extinguisher should be used only by trained people, and only from a position from which escape is possible.
 - [g] Firefighters should be informed of what chemicals are involved. A copy of the current Chemical Inventory List should be available outside the work area.
 - [h] Laboratories should be posted with the National Fire Protection Association diamond, which provides much emergency information. The information on the NFPA warning must be current.
 - [i] Fires involving laboratory chemicals increase the possibility of explosions. Special care should be taken to keep fire or excessive heat from volatile solvents, compressed gas cylinders, reactive metals and explosive compounds.
 - [j] As soon as possible, all extinguishers that were used should be recharged or replaced with full extinguishers.
3. Personal Injuries Involving Fires: Persons whose clothing is ablaze should be drenched under the safety shower or “drop and roll.” If the shower is not convenient, the individual may be doused with water, covered with a blanket, or other procedure to quench the fire. After the fire is out, the individual should be kept warm to avoid shock and exposure. Medical attention should be promptly sought.

F. Chemical Spills on Personnel

1. For spills covering small amounts of skin, the area should be washed with flowing water for several minutes.
 - [a] Jewelry should be removed to facilitate cleaning.
 - [b] If there is no visible burn, the area should be washed with water.
 - [c] After washing, the MSDS should be consulted to determine if any delayed effects should be expected.
 - [d] If a burn is visible, medical attention should be sought after the washing has been completed.
2. For larger spills, the same procedures should apply, except that it may be appropriate to use the safety drench shower to assure thorough and complete washing.
3. For spills on clothing and whenever necessary, the clothes should be removed as quickly as possible.
 - [a] Shoes and jewelry should be removed to facilitate washing.

- [b] The safety drench shower should be used for fifteen minutes unless the spill is known to be restricted to less harmful substances.
 - [c] Special care should be taken to prevent chemicals from entering the eyes.
 - [d] Any affected skin should be thoroughly flooded for fifteen minutes, and the washing should be resumed if pain continues.
 - [e] No creams, salves or lotions should be placed on the burn.
 - [f] Medical attention should be sought as soon as possible.
 - [g] Contaminated clothes should be washed separately from other personal clothing.
3. Dealing with Medical Help: Medical personnel should be fully informed as to the chemical involved in the spill, and of the circumstances of the spill.
 4. Splashes in the Eyes: The eye(s) should be immediately flushed with tempered potable water from a gently flowing source for at least fifteen minutes. The eyelids should be held away from the eyeball while the eyeball is moved up, down, and sideways to wash behind the eyelid(s). Contact lenses should be removed if they are not stuck in place. If they are stuck, get immediate expert medical assistance.

First aid should be immediately followed by treatment by qualified medical personnel.

G. Other Accidents Involving Personal Injury

1. Anyone overcome with smoke or fumes should be removed to uncontaminated air and treated for shock. The rescuer should evaluate the possibility for harm before entering or continuing to remain in a toxic environment.
2. If hazardous chemicals are ingested, the first aid treatment shown on the label or in the Material Safety Data Sheet should be undertaken.
3. If an injured person is not breathing, the rescuer should provide mouth-to-mouth resuscitation, using appropriate methods. Special training is required to provide cardiopulmonary resuscitation (CPR).
4. Bleeding should be controlled by compressing the wound with a clean cloth or other appropriate compress. The injury should be elevated above the level of the heart. After bleeding is controlled, the injured person should be covered to avoid shock. Medical attention should be called as soon as possible.
5. If a person is in contact with a live electrical circuit, the power should be shut off at the most convenient switch. The person should not be contacted until the power has been disconnected.
6. Never place anything in the mouth of an unconscious person.

H. General Chemical Spills

1. All spills should be cleaned up promptly. Any individual at risk of involvement should be warned about the spill.

2. Local procedures should be established and followed for determining when evacuation is necessary.
3. In a spill, chemicals often spread increasing the damage, so absorbent material should be used to surround the spill area. After the spill has been contained, it can be cleaned up with appropriate tools, including commercial spill control kits, for example.
4. If the spill is for an acid or base, it may be neutralized by an appropriate solid:
 - [a] Sodium bisulfate will neutralize bases.
 - [b] Sodium bicarbonate will neutralize acids.
5. When dry, the spilled material must be treated as chemical waste.

I. Accident Reports

All accidents and near accidents should be carefully investigated. The results of that investigation and recommendations for the prevention of similar occurrences should be forwarded to the Principal, Curriculum and Instruction Specialist, and District Safety Department. Accident reports should be kept on file, as indicated in the Record keeping section of this document