EMERGENCY PREPAREDNESS AND RESPONSE

CONTENTS

Overview

This chapter provides information and strategies to prepare for contingencies in the science classroom, laboratory and preparation areas. Emergency plans establish policies and procedures to consistently, efficiently and safely deal with different kinds of emergencies and are tailored to the specific design, circumstance and nature of school hazards. Procedures must also speak to any additional needs of students when they are an integral part of the school population. This chapter includes sections on planning emergency responses, responding to incidents and medical emergencies, and preparing incident reports.

General safety inspections or audits

Safety inspections are an excellent place to start when preparing for potential science classroom or laboratory emergencies. Inspections are a tool used to identify, assess and control workplace hazards. Section 19 of the *OHS Act, 1993* outlines the duties of an OHC, which includes helping to identify and control workplace hazards. Section 28 of the *OHS Regulations, 1996* requires workplace inspections to be completed by the OHC or representative. As such, OHCs or representatives must be included in the inspection process. Typically, inspections of science classrooms and laboratories would be done as part of the larger school inspection process, and would include a thorough evaluation of general safety concerns such as fire prevention and response, as well as response to medical emergencies, gas leaks and other situations. In addition, special attention would be given to areas where chemicals are stored and used, since extra precautions and equipment is involved in these locations. An inspection checklist can be developed to assist in this process and to ensure that nothing is overlooked. See **Appendix 8** for a sample inspection checklist for assessing safety in the chemical laboratory area.

Emergency preparedness planning

Part III, 'General Duties' in the *OHS Regulations, 1996* requires the provision of information, instruction, training and supervision that is necessary to protect the health and safety of workers. This includes the development of emergency plans or responses as determined by a risk assessment to protect workers. To determine what emergency plans are required in the workplace, the employer (in conjunction with the OHC or representative), must complete a risk assessment. Once hazards are identified, safe work policies and procedures can be developed for day-to-day activities as well as for emergency situations. Prior to plan development, Part XXV 'Fire and Explosion Hazards' of the *OHS Regulations, 1996*, should also be reviewed. The following topics are additional recommendations to be covered in an emergency preparedness plan:

- Hazard identification, assessment and control.
- Emergency response procedures.
- Incident investigation.
- Policy and responsibility statements.
- Review procedures.
- Training, and
- Worker participation strategy.

Creating your own emergency plan

A model plan should contain the following elements:

Statement of Purpose	A brief description of what the plan is intending to achieve is necessary to set planning parameters and to establish a benchmark against which all subsequent action is taken. In other words, if an event can be handled with day-to-day resources and procedures, it does not belong in the plan.
Concept of Operations	An overview of how the plan functions and its relationship to other activities helps rearrange the organizational framework needed for managing the situation. A classroom emergency plan could provide direction for a problem to be handled by an individual teacher within certain parameters. When conditions exceed those parameters, a school team of officials could establish control and provide direction and support to the affected area. If the problem affects the school at large, then the plan is interfaced with the division or the community emergency or crisis management plan.
Risk Assessment	To assist in developing adequate arrangements, a thorough risk assessment should be completed. The assessment will help classify what belongs in day-to-day policies and procedures and what belongs in an emergency plan. Eventually, the assessment can be minimized to those hazards/threats that actually warrant activation of the emergency plan and include them in the document.
Authority	A reference to specific legislation / regulation / policy gives legal expression to the plan. It is also wise to define authoritative roles and responsibilities within the plan.
Activation	The conditions that must exist for the plan to be activated should be clearly stated. Care is required to avoid ambiguity often inherent in such statements. This can be overcome by stating routine conditions that do not justify activation of the plan along with the crisis conditions that mandate activation.
Notification	A procedure for alerting key officials about the onset of a crisis situation is highly recommended. This creates a routine for quickly assembling a pre-designated crisis management team once the plan is activated. This may be part of a larger Communications Plan, but still must be included separately.
Centralized Control	A location for the crisis management team(s) to work from should be designated and prepared in advance as well as consideration for an alternate location. People in crisis like to know where the leadership team is at all times, and how to contact them. Furthermore, there should be a designated muster point for those being evacuated.
Self-Assessing	The plan should be self-assessing. This means the plan includes a checklist of questions by which you can determine if the plan meets your needs or requires updating.
Check Sheets	These sheets outline the actions that should be taken when the plan is activated. Actions are listed in order of priority and can be used to assign key roles to individuals.
Appendices	The appendices contain the working documents that supplement the procedures defined in the Check Sheets.
References	This section provides a list of other resources that would be useful in designing an emergency plan.

An effective hazard and risk assessment analysis breaks a procedure down into the steps required for completion. Each step is scrutinized to determine associated hazards and risks. Then, starting with greatest degree of risk, focus attention on eliminating or reducing the risk for that step by controlling the hazards.

Considerations in emergency preparedness planning

Emergency plans address a number of different safety hazards and emergency situations. As a minimum, the plan would include policy and procedures regarding, fires, chemical accumulations, spills and leaks, first aid, orientation and training. The following sections of the *OHS Regulations, 1996* apply to these minimums, however other federal, provincial and municipal laws and regulations should also be considered:

- s. 19 – training of workers.
- Part V – first aid.
- s. 310 – accumulations, spills and leaks, and
- s. 360 – fire safety plan.

Sources of emergency plans

As plans are developed and reviewed, schools may find it useful to consult various online models available online. These models follow the generally accepted planning design principles, and are recommended only as a guideline to help school disaster planners develop, implement, assess and revise emergency plans. In Saskatchewan, the Saskatchewan Emergency Management Organization (SaskEMO) may be available to assist with interpreting and applying planning strategies, taking into account each school's and board's unique resources and the community emergency response support mechanism. OHCs and staff should also assist with reviewing drafts and evaluating existing plans.

Some useful resources and templates can be found at:

- http://www.gr.gov.sk.ca/SaskEMO
- http://www.municipal.gov.sk.ca/Emergency-Plan-Development
- http://www.gr.gov.sk.ca/OFC
- http://envirohazmat.ca
- http://www.sepa.ca/
- http://www.centennialcollege.ca/empsi

Evaluating your emergency planning

To evaluate whether the emergency preparedness plan is adequate, consider whether the plan is appropriate, comprehensive and realistic for the workplace and whether it includes measures for implementation.

An effective emergency plan ensures the following is included:

- All potential emergencies are mentioned in the plan but it is the most probable events as determined by the hazard and risk assessment analysis which are developed into contingency arrangements.
- The required supplies and equipment are available and in good condition.
    - For example, fire extinguisher(s), first aid kit(s), respirator(s), spill kit(s).
- An effective process to announce an emergency to all staff members, students and visitors.
- Drill schedules which periodically test response to one incident at a time.
- Drill record evaluation rubric to determine plan feasibility.
- Staff members understand the plan and have signed off.
- Staff members are aware of their roles if there is an incident or if an evacuation is necessary; staff and their back-ups are sufficiently trained to carry out these roles.
- The required number of staff are trained in emergency and standard-level first aid, and
- All staff members are trained and prepared to know how to:
    1. Declare an emergency,
    2. Initiate the alarm, and
    3. Determine if the required level of response is standby, escalation, evacuation or take cover.

Responding to fire

A response procedure for a school fire would address the following elements (check with your local fire chief to ensure requirements are met):

- When to sound the local fire alarm.
- When and how to evacuate the school.
- Who is responsible for notifying the fire department and the school's superintendent.
- When staff members may attempt to extinguish a fire, and procedures for doing so.
- When and how to permit people to re-enter the building, or to carry out further evacuation procedures if staff and students will be unable to return.
- Procedures for securing utilities, and
- Responsibilities and procedures for filing written reports with the school's supervisor and the Fire Marshal.

Responding to toxic substance leaks and spills

A written response plan is required under section 310 of the *OHS Regulations, 1996*. This plan should include procedures for emergency response to chemical or biological substances that may be hazardous to the health and safety of workers. Examples could include toxic, corrosive or reactive substances. MSDSs provide general guidance on the actions to take in case of a specific chemical spill or leak under the 'Accidental Release Measures' section. However, an employer is still responsible to develop site specific response procedures. An employer's emergency plan should include:

- Who is trained to clean up spills.
- What equipment, supplies and personal protective equipment is required to contain, neutralize and decontaminate the spill or leak.
- Where spill kits are located.
- How to determine if leak or spill can be safely contained.
- When and how to evacuate.
- Who is responsible for requesting emergency services and informing appropriate school officials.
- Procedures and responsibilities for providing the appropriate MSDSs to the emergency responder, hospital or physician, and
- Procedures and responsibilities for reporting the leak or spill to appropriate authorities and completing any follow-up investigation.

For spills of small quantities of less dangerous substances, a full emergency response may not be required. See **Chapter 7** for samples and recommended clean-up procedures.

Responding to a natural gas or propane leak

Natural gas and propane are flammable gases that are used as fuels in science laboratories. Both are delivered under pressure. Any leakage of gas from pipes or fittings creates a fire and explosion risk, particularly if the leakage is in a confined area, and especially if it remains undetected for some time. A slow continuous leak can lead to migration of gas through a room or building until it reaches a source of ignition, resulting in an explosive flash back to the source. A fire near the source of a leak may also cause the gas container or pipe to explode.

Emergency planning should address the following elements for natural gas or propane leaks that cannot be immediately stopped:

- When and how to evacuate the area.
- Who will alert the fire department and school division officials, and
- Circumstances and procedures for when staff members may attempt to localize or dissipate the leaking gas

Responding to incidents and medical emergencies

To handle medical emergencies and serious injuries, each school is required by OHS legislation to have staff with emergency or standard-level first aid training. Table 9 of the *OHS Regulations, 1996* Appendix notates first aid requirements including whether trained staff should have Class A or Class B and Tables 1 and 3 indicate the minimum requirements for Class A and B qualifications.

For more first aid information, see **Chapter 3 First aid kits** section.

The next section outlines first aid for minor and major injuries that are most likely to occur in the science laboratory or classroom. Included are the first steps to alleviate damage and to treat the injury, as well as when to engage local emergency services. School divisions may have additional procedures or regulations for responding to medical emergencies.

Corrosive chemical on the skin

Be familiar with the location of safety showers and the first aid measures specified in the chemical's MSDS. The general rule is to wash the area immediately and thoroughly with cool water, or soap and water. The minimum recommended washing time is 15 to 20 minutes. Remove contaminated clothing. If significant harm is detected or suspected, seek medical assistance.

Splashes into the eyes

Know the location of the eyewash stations in the workplace. Immediately flood the eye(s) with a gentle stream of cool water for a minimum of 15 to 20 minutes, holding the eye(s) open if necessary. Remove contact lenses if present (note: contact lenses should not be worn in the science laboratory). Proceed to get medical help to assess the condition of the eye(s) and ensure no further damage occurs. Alkalis produce more serious burns than acids, but flushing should begin immediately regardless of the substance. Depending on the types of chemical and quantities present, an approved plumbed-in or self contained eyewash station may be required by *OHS Regulations, 1996*.

Foreign object in the eye

If help is not available, try to flush the eye clear on your own. While keeping the eye open, position an eyecup or small clean glass of water with its rim resting on the bone at the base of the eye socket and pour the water in. If the eye cannot be cleared, seek emergency medical help.

To help a person with a foreign object in the eye:

1. Keep the person from rubbing the eye.
2. Wash your hands.
3. Sit the person in a well-lit area.
4. Visually try to locate the foreign object.
    - Examine the eye by gently pulling the lower lid downward and instructing the person to look upward.
    - Reverse the procedure for the upper lid by holding the upper lid and examining the eye while the person looks downward.
5. If the object is on the surface of the eye, it may be able to be flushed out or removed manually.
    - While holding the upper or lower lid open, use a moistened tissue or the corner of a clean cloth to remove the object by lightly touching it.
    - Once removed, flush the eye with a saline solution or lukewarm water.
    - If the object cannot remove easily, cover the eye with a soft cloth and seek emergency medical assistance.
6. If the object is embedded in the eye, do not remove the object.
    - Apply a dressing over the eye in such a way that it does not make direct contact with the eye surface.
    - Cover the dressing with a cup or ring pad, and seek emergency medical assistance.
7. If pain, vision problems or redness persists, seek emergency medical help.

Cuts

Put on disposable gloves to minimize risk of infection from blood. If necessary, wash minor cuts with cool water to remove any foreign material, dry the area and cover with a bandage.

In the case of major cuts with severe blood loss, apply a large compress, and then apply direct pressure with the heel of your hand and transport the individual to the hospital.

If a piece of glass or other sharp object is imbedded in the wound, tent dress the area and add padding around the injury until it is higher than the imbedded object. Secure padding with a wrapping of gauze and seek medical help.

For major cuts with minor bleeding, cover with a gauze pad, then transport the victim to hospital for further medical help. Do not attempt to remove glass or any other sharp object that may still be in the wound. Be careful not to put undue pressure on the gauze while transporting the victim, since circulation may be cut off completely.

Ingestion of chemicals

The primary source of information in Saskatchewan on prescribed treatment for ingested chemicals is the Poison and Drug Information Services; telephone toll free for Saskatchewan residents: 1-866-454-1212. The Canadian Association of Poison Control Centre is available 24 hours a day, seven days a week, 365 days a year. Before proceeding with any treatment for chemical ingestion, the center should be called.

Another source of information on treatment can be found on the chemical's MSDS. However, inconsistency in the treatment prescribed does occur depending upon the source of the MSDS. As well, the treatment may not be consistent with that prescribed by the Poison and Drug Information Services.

It's no longer recommended to have the victim drink plenty of milk or water; inducing vomiting may cause more harm than good especially if the chemical aspirates into the lungs.

Burns

Treatment of minor burns is basically a three-step process:

1. Cool the burned area for about 15 minutes by running cool water over it, immersing it in cool water or cooling with a cold compress. Do not use ice for this time period as this may freeze the area of treatment.
2. Apply a triple-antibiotic ointment or a moisturizer primarily to prevent drying. Loosely wrap the burned area with a sterile gauze bandage, avoiding excess pressure on the burned skin.
3. If the burn is severe, cool the area as described above, wrap loosely with a moist dressing and transport the person to a hospital for medical assistance.

If in doubt, seek medical assessment and treatment.

Burning clothing

Rapid action in extinguishing burning clothing is critical to minimizing exposure of the victim, and minimizing resulting harm. Several approaches are sometimes used and your local fire department or school division policy may recommend one of these as the preferred response.

The "stop, drop and roll" method is commonly recommended by fire departments.

In conjunction with the "stop, drop and roll" technique, other heavy clothing or a fire blanket may be used to smother the flames. Divisions should check with the local fire chief to ascertain what fire fighting supplies should be kept at the school. If a blanket is used, it must be removed immediately after the fire is out to minimize trapping of heat and sparks against the victim's skin. Other options for extinguishing burning clothing include the use of an ABC dry-chemical fire extinguisher, spraying the victim with water or using an emergency shower, if available. Selection of any one of these options may be circumstantial; the use of the fire extinguisher, for example, may not be practical from a safety perspective if the fire is near the facial area and chemical spray will get into the victim's eyes.

Once the fire is extinguished, loose clothing can be removed if necessary, but any clothing adhering to the burned skin should not be removed. After the fire is out, follow the previously described burn response procedures.

Shock and fainting

Lie the person down if they are in shock and elevate their feet higher than their head. Loosen tight clothing, cover the person with a blanket and talk to the person reassuringly. Do not give them anything to drink. If the person has fainted, place the victim in the recovery position (meaning lay the person on their side and tilt their head back to keep the airway open). Ensure that the airway is clear and that the individual is breathing. Leave the person lying down, make their head comfortable and place a blanket over them. If there is a chance of injury due to the collapse, avoid moving the individual if they are breathing until you can confirm no injury was sustained. On the other hand, if the airway is blocked or the victim is not breathing, the head may have to be tilted back or the victim may have to be turned onto their back in order to begin artificial resuscitation or cardiopulmonary resuscitation (CPR). If other injuries are present or any symptoms persist, seek emergency medical assessment and treatment. If the individual must be left alone, always place the victim in the recovery position, and ensure the airway is open.

Inhalation of toxic fumes

If it is safe to do so, move the victim into fresh air and contact the Poison and Drug Information Services; telephone toll free for Saskatchewan residents: 1-866-454-1212 for victim treatment information.

If available on site and as necessary, summon trained personnel who can administer oxygen, begin CPR or other medical procedures. In severe cases, seek further medical treatment at a hospital.

Other medical emergencies

Being prepared to effectively deal with emergencies involving serious existing medical conditions such as asthma, anaphylactic shock, diabetes or epilepsy requires open communication between school administration, counselors and parents. Teachers need to know if students have these conditions, as well as what to look for and what to do if the student becomes symptomatic. Basic training could be provided to assist teachers in dealing with, for example, seizures or insulin shock. If in doubt, seek medical assessment and treatment.

Incident reporting

An incident is an undesired event that causes harm to individuals, property or the environment. In order for an incident to occur, a hazard must be present. A hazard is the situational component which carries the risk of injury. A hazard could be anything from an ill-placed power cord that poses a tripping hazard to a water leak in the roof that poses a slipping or mold hazard. If a hazard is not identified and controlled, incidents happen and people property or environments are often affected. When an incident occurs, the first concern is the injured. Priority can then be placed on systematic investigation and proper reporting of the incident.

Legislation dictates that certain work-related incidents must be reported to the Ministry of Labour Relations and Workplace Safety, Occupational Health and Safety Division (the Division). Part II, section 8 of the *OHS Regulations, 1996* requires employers give notice to the Division as soon as reasonably possible if:

- The incident causes or may cause the death of a worker, or
- The incident requires a worker to be admitted into a hospital for 72 hours or more.

Part II, section 9 of the *OHS Regulations, 1996* states that an employer must also report work-related incidents to the Division when dangerous occurrences take place. This section defines a dangerous occurrence as:

- An incident that does not result in, but could have resulted in death or hospitalization described above in section 8 of the *OHS Regulations, 1996*.

OHS Regulations, 1996 sections 29 and 31 also required the OHC to investigate dangerous occurrences as well as incidents that caused or may have caused death or 24+ hour hospitalization of an injured worker. Moreover, both The Division and the Workers' Compensation Board (WCB) may choose to investigate an incident.

Incidents involving workers that fall under the jurisdiction of the *Saskatchewan Workers' Compensation Act, 2013* (*The Workers' Compensation Act, 2013*) and Regulations must also submit an employer's initial report of injury (E1) within five days of becoming aware of the incident. Laboratory aides and care taking staff fall within the scope of this legislation; whereas teachers, vice-principals and principals do not. Students do not fall under *The Workers' Compensation Act, 2013* unless on approved off-campus education programs, such as work experience. *The Workers' Compensation Act, 2013* requires both the employer and the worker to report injuries which result in the loss of work after the day of injury, and all injuries that require medical attention. For more information regarding notifying the Board of an injury, see section 52 of *The Workers' Compensation Act, 2013*.

Schools can improve safety and show compliance with incident reporting requirements by ensuring that:

- All incidents and injuries are recorded, reported and investigated as appropriate.
- Staff know when and how to report incidents, including where to access reporting forms and instructions.
- Staff know what kinds of incidents will be investigated.
- Staff receive appropriate orientation and training and understand roles and responsibilities.
- All required information is gathered and provided by supervisors for staff compensation claims.
- General pre-planning has been done regarding incident investigation and reporting.
- The direct, indirect and root cause(s) of incidents are determined, and
- Measures are taken to control hazards and prevent incidents from reoccurring.

See **Appendix 9** for a sample Incident Report/Investigation form. This sample shows the type of information that is required, as well as who is required to complete the report.

Near-miss reporting

A near-miss is an event that could, but does not, result in an incident.

Recall the difference between a near-miss and a dangerous occurrence is that a near-miss does not speak to the possibility of death or 72 hour hospitalization.

Like incidents, near-misses are caused by unsafe acts or conditions also known as hazards. Further examples of hazards include handling materials without proper training, failure to use personal protective equipment (such as safety glasses, inadequate lighting, prolonged noise exposure above 85 dB), and poor housekeeping.

Documentation of near-miss situations, although not required by law, should be done internally and the incident information shared with colleagues as a means to identify, assess and control hazards.

In taking this action, near-miss reporting becomes a proactive way of improving safety awareness, identifying and tracking potential hazards and ultimately preventing incidents. Whenever a near-miss is recorded, it is important to identify, as far as possible, the hazards that contributed to the incident. Actions can then be taken to eliminate or reduce the risk of a similar incident occurring in the future.