

Section 2

Hazard Assessment and Control

East
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East Central Alberta Catholic Schools

Occupational Health and Safety Manual

2019

OCCUPATIONAL HEALTH AND SAFETY

INTRODUCTION TO WORKPLACE HEALTH AND SAFETY HAZARDS IN THE EDUCATION ENVIRONMENT

A variety of workplace hazards are commonly found in the educational environment. The various categories of workplace hazards are summarized below.

PHYSICAL HAZARDS

Physical hazards in the workplace include hazards that may be generated by people, equipment, machinery, tools, facility characteristics, or environmental factors. Equipment as common as the furniture in an office may present a hazard. For example, a bookcase or filing cabinet may be overloaded and collapse injuring a worker. Lack of electrical outlets may lead to use of extension cords and create a tripping hazard. A teacher assistant may be hit by a special needs student. Stripping floors, working from ladders or conducting inspection activities on rooftops can generate potential fall hazards.

Equipment or machinery used by district staff can range from heavy-duty objects like an auto hoist or forklift truck to smaller apparatus such as ovens, table saws, photocopiers, or paper cutters. Serious injuries, such as burns or loss of a hand or finger can result from working with machinery if proper safeguards are not in place to prevent parts of the body or clothing from coming into contact with them. Electrical powered equipment, tools, cords and plugs must be maintained in a safe condition.

Environmental factors such as excessive or prolonged noise can damage the nerves in the ear causing temporary or permanent hearing loss. Noisy environments in school settings often involve working with noisy tools/equipment such as table saws, drills, propane burners or musical instruments. Extreme temperatures, either hot or cold, can be hazardous unless the appropriate precautions are taken.

People through their personal characteristics, behaviors and actions can also present workplace hazards. Staff may be required to deal with angry or violent students or parents or students needing special care that requires heavy lifting. Staff members working alone or in isolated areas may be at greater risk for workplace violence by a building intruder.

Ergonomics hazards are created when characteristics of the job, tools or physical environment put physical stress and strain on the body. If workstations; tools and equipment; the physical environment and the general organization of the work are not correctly designed, undue stresses and strains can be placed on the body. Injuries that cause disorders to the muscles, tendons and nerves may happen when the same muscles and tendons are used over and over again. Staff performing repetitive tasks (e.g. keyboarding, vacuuming,) work in awkward postures or lift, push or pull heavy objects are at risk of suffering overexertion or repetitive strain injuries. Staff whose jobs require them to stand or sit for prolonged periods, use their hands communicate (sign language interpreters) or extend their voices for long periods of time may be at greater risk or injury.

CHEMICAL HAZARDS

Chemical hazards are agents that can be inhaled, ingested or absorbed into the skin and cause short or long term health effects. Chemicals can come in many forms including vapors, gases, dusts, mists and fumes. These chemicals are present in cleaning products, whiteboard markers, art supplies, paints, laboratory chemicals, wood dust and building materials (e.g. asbestos). Hazardous chemicals can only cause damage if they enter the body in sufficient amounts.

The risk of toxic chemical exposure and damage occurs when the hazard is not known or recognized and the correct precautions and training have not been used for the handling/storage of hazardous substances. WHMIS legislation requires labeling, material safety data sheets and training of all staff that use or handle any product containing a potentially hazardous chemical. Asbestos containing materials that become significantly damaged must be removed, or isolated to prevent exposure to airborne fibres.

Chemicals can be toxic, flammable, corrosive or explosive either alone or in combination. As a general rule, commercial products containing chemicals should **NEVER** be mixed e.g. bleach which contains chlorine should never be mixed with a toilet bowl cleaner that may contain acid as the combination will produce a toxic and potentially fatal gas. Ventilation systems that do not operate properly can lead to a buildup of indoor air pollutants. In some cases respirators may need to be worn if ventilation is inadequate.

BIOLOGICAL HAZARDS

Biological agents are living organisms that can cause illness or disease. Biological agents include bacteria and viruses found in body fluids (e.g. hepatitis B), fungi (mould), rodents (hanta virus) and insects. Biological hazards can be transmitted by contact, inhalation or ingestion. Precautions when administering first aid or toileting students are required. Exposure to mouse droppings should be avoided and mould or water damaged materials should be removed. Good hygiene practices, protective gloves and frequent hand washing are examples of biological controls. Not all biological agents are harmful but precautions are always the best defense.

PSYCHOSOCIAL HAZARDS

Psycho-social hazards are working conditions that create stressful work environments or increase the potential for injury or illness. These are often difficult to define or measure. They include working conditions, e.g. working alone, cognitive demands, degree of control over workload, fatigue, language barriers, dealing with difficult parents or students, large class sizes, heavy workloads, etc. that can create stressful work environments that have the potential to contribute to injury or illness.

Summary of Hazard Types

Physical Hazards

Hazards generated by people, equipment, machinery, tools, facility characteristics or environmental factors

- ☐ Cluttered work areas
- ☐ Slips, trips and falls
- ☐ Falls from heights
- ☐ Struck by or against objects/people
- ☐ Caught in, under or between objects
- ☐ Cuts, punctures and abrasions
- ☐ Burns from hot equipment
- ☐ Fire/explosion (hot work, flammable materials)
- ☐ Electricity and Static electricity
- ☐ Extreme heat or cold
- ☐ Noise
- ☐ Confined Spaces
- ☐ Vibration
- ☐ Non-ionizing radiation (microwaves, infrared, RF, lasers, UV)
- ☐ Ionizing radiation (alpha, beta, gamma, x-rays)
- ☐ Poor lighting/visibility
- ☐ Sunburn
- ☐ Insect bites
- ☐ Vehicles
- ☐ Adverse weather conditions (rain, ice, snow)

Chemical Hazards

Agents (e.g. gases, vapors, mists, fumes, dusts, fibres) that can be inhaled, ingested or absorbed into the skin to cause harm (e.g. burns, irritation, long term health effects cancer)

- ☐ Cleaning products
- ☐ Asbestos
- ☐ Wood Dust
- ☐ Paints Solvents
- ☐ Disinfectants
- ☐ Combustion gases
- ☐ Boiler chemicals

Biological Hazards

Includes living organisms that can cause illness or disease

- ☐ Fungi (e.g. molds)
- ☐ Viruses and/or bacteria
- ☐ Blood/body fluids
- ☐ Animals (rodents, insects)

Ergonomic Hazards

Characteristics of the job, tools, or physical environment that put physical stress and strain on the body

- ☐ Lifting/lowering or carrying heavy loads
- ☐ Pushing/pulling heavy objects
- ☐ Bending/twisting motions
- ☐ Above shoulder level work
- ☐ Reaching to lift or perform work
- ☐ Grasping, clenching, and/or pinching with force
- ☐ Highly repetitive lifting or hand/arm motions
- ☐ Holding awkward positions for long periods of time
- ☐ Poor workstation design
- ☐ Working in tight areas

Psycho-Social Hazards

Working conditions that create stressful work environments or increase the potential for injury or illness

- ☐ Working alone
- ☐ Violence or abuse
- ☐ Shift work
- ☐ Overuse of voice (e.g. vocal abuse and related physiological disorders)
- ☐ Environmental/geographic conditions (work on slopes or grades; soil conditions)
- ☐ Work related stress
- ☐ Communicable disease/public health issues
- ☐ Personal health issues or physical limitations
- ☐ Language barriers

Summary of Workplace Hazard Controls

Elimination

This is the first method used to control a hazard once discovered. If we can eliminate the hazard, the level of risk is eliminated. Some of the techniques are:

- Deciding if the task is necessary
- Substituting hazardous materials or substances for less hazardous substances
- Changing the way that the task is performed, I.e. Removing snow from a roof from ground level rather than climbing onto the roof.

Engineering Controls

These are the preferred methods of control as they control hazards at their source. They reduce exposure by removing the hazard or isolating the hazard from the worker.

- Store materials at lower heights to eliminate reaching and need for ladders
- Fix or replace damaged equipment
- Substitution with a less product (e.g. use latex paint instead of oil based)
- Use adjustable chairs to reduce ergonomic risks
- Eliminate extension cords by installing more electrical outlets
- Install local exhaust ventilation to capture and remove welding fumes
- Put a guard over moving machinery parts to prevent accidental contact
- Using dilution control systems to eliminate contact with chemicals
- Mechanical aids or lift devices to eliminate the need for manual lifting
- Enclose damaged asbestos materials to prevent contact with them

Administrative Controls:

Administrative controls control the hazard at level of employee. They include practices that reduce likelihood of exposure by preventive maintenance or altering the time or way a task is performed. Examples of administrative controls include: training/education, policies, and safe work procedures, and rules, codes of practice, purchasing standards, supervision, signage, labeling, job rotation /scheduling, and housekeeping.

- A purchasing standard that requires emission controls on fuel burning equipment
- WHMIS training for staff who use chemicals
- Labels and current Materials Safety Data Sheets for chemicals
- Posting hazard warning signs for confined spaces
- A safe work procedure for handling asbestos containing materials
- Designing work schedules to provide micro-breaks during repetitive tasks

Personal Protective Equipment (PPE)

Controls hazard at level of employee. PPE is the least preferred method of control and should always be the last hazard control option to be considered. CSA approved eye protection, safety footwear, gloves, hearing protection etc. NIOSH approved respiratory protection, coveralls, and aprons are examples of PPE.

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Workplace Hazard Assessments Frequently Asked Questions

What is a hazard assessment?

Hazard assessments are the building blocks of an effective worksite health and safety program. A hazard assessment is a process that looks at what could cause harm to employees at a worksite. Doing an assessment allows the district and its employees to decide whether enough precautions have been taken to prevent accidents and injuries. In its simplest form the hazard assessment asks the question “what if”?

What types of hazards are found at worksites?

Workplace hazards include physical, chemical, biological, and psychological hazards. These can come from the environment, tools, materials, equipment and people found at the worksite.

Is there a legal requirement to conduct hazard assessments?

Yes. Part 2- Section 7 of the Alberta Occupational Health and Safety (OHS) Code requires that the employer conduct a written hazard assessment of the worksite and prepare a report of the findings and methods used to eliminate or control the hazards identified.

Must a hazard assessment be completed for each employee?

No. If employees working in similar positions face the same hazards at single or multiple worksites and the safe work practices to be followed are similar, then a single hazard assessment applicable to similar positions at all worksites is acceptable. (E.g. one hazard assessment for custodial assistants will probably apply to all custodial assistants working at a particular high school, but the content of the hazard assessment may vary between different high schools depending on site conditions).

What tools are used to complete a hazard assessment?

Position descriptions, observations of the worksite, records of workplace accidents, inspections, and talking with staff all provide valuable information for the hazard assessment. Hazard assessments must be completed with direct input and observations of the staff that perform the task since they are the most knowledgeable about what they do.

How is risk assessed and prioritized?

During a hazard assessment the potential risk levels associated with various job activities are prioritized into “critical tasks” for hazard elimination and/or control. Risk level and priority is determined by looking at three factors: frequency of exposure to the task, probability of harm, and severity of potential consequences

How are hazards eliminated and controlled?

While all hazards cannot be eliminated there are a number of ways to reduce the severity of hazards. Job hazards identified as high risk become the “critical tasks” that should be addressed first by administration when developing worksite hazard controls. Critical tasks may be further broken down into individual steps (e.g. job hazard analysis) and the hazards associated with each step are identified. Specific controls are then identified. This might include a safe work procedure, training, or as a last option personal protective equipment. The medium then low risk tasks are dealt with in the same fashion once the high risk tasks are completed.

How often must hazard assessments be conducted?

Hazard assessments should be repeated at reasonable intervals and whenever new equipment, new work processes or other changes are introduced to the workplace. The legislation requires that hazard assessments be updated at least every 3 years to determine if current control measures are effective and if any changes at the worksite have introduced new hazards. Through annual OHS Tool Kit reminders, schools will be asked to review and validate their hazard assessments on a regular basis.

What assistance is available for hazard assessments?

Sample hazard assessment templates have been developed for a number of staff positions. These can be modified to reflect the specific conditions at your worksite. The OHS Coordinator is available to provide assistance when needed.

Staff Guidelines for Completing Hazard Assessments

1. Before starting, review the district document *Frequently Asked Questions - Workplace Hazard Assessments* and the occupational health and safety bulletin *Introduction to Workplace Health and Safety Hazards in the Education Environment*. These documents are available in the Occupational Health and Safety manual or by contacting Occupational Health and Safety Coordinator.
2. Obtain the sample hazard assessment template that best describes your job position (e.g. teacher, custodian, administrative assistant etc.) These templates are available in the Occupational Health and Safety manual or by contacting Occupational Health and Safety Coordinator.
3. Review the sample template format to ensure that it accurately reflects your job and the types of work activities you do. Follow steps 1-6 which are outlined on the hazard assessment template.
 - **Step 1:** List the primary types of work you do and the work related tasks or activities. Primary types of work include a broad description of the general nature of work carried out (e.g. office work, classroom preparation, cleaning). The work related activities would be the specific activities carried out within each type of work (e.g. Operating office equipment, using computers, conducting lesson planning, vacuuming floors etc.).

- **Step 2:** Identify existing or potential hazard sources and types. List the equipment, tools, materials, people and environmental factors associated with each task that may be existing or potential sources of workplace hazards (e.g. machinery, chemicals, computers; lifting heavy loads, workstation design, prolonged standing for long periods, asbestos, violent/angry parents or students, temperature extremes etc.)
- **Step 3:** Assess the risk and prioritize the hazards for control (refer to the footnotes at the bottom of the template to see how risk values are obtained). Consider how often are you exposed to these hazards? What is the probability they could result in harm and what are the severity of consequences? Tasks identified as high risk on the template should be flagged as “critical tasks” and addressed first by administration for hazard control. A more detailed job hazard analysis of these critical tasks may be undertaken at a district level by Occupational Health and Safety Coordinator and communicated to the workers at all worksites.
- **Step 4:** Identify and implement hazard controls. Consider what controls are in place at your worksite what controls may still be needed to eliminate or reduce the risk associated with the hazards identified (e.g. if you work with chemicals, WHMIS training would be needed). Guidelines or safe work procedures referenced on the hazard assessment templates are available by contacting an Occupational Health and Safety Consultant.
- **Step 5:** Review and communicate the hazard assessment document assessment with applicable staff. Provide input to your supervisor/administrator so the template can be updated if necessary to reflect your job position. Once these changes are made you will be asked to sign or initial the completed assessment so your administrator can demonstrate that hazard assessments have been communicated to staff and they have been involved in the process.
- **Step 6:** Copies of the completed assessments should be kept on file at the school or worksite and readily accessible should they be requested by an Occupational Health and Safety (OHS) Consultant or regulatory authority for review. A review of the hazard assessment should be scheduled every 3 years or sooner if the job process changes. If at any time you need assistance feel free to contact a district Occupational Health and Safety Coordinator.



HAZARD ASSESSMENT AND CONTROL REPORT

School/Worksite: Staff Group:		Position Summary:		
Assessment Team:		Date:		
Type of Work: ¹				
Work Related Activities ²	Potential Hazards ³	Frequency:	Risk Level ⁴ High Med Low	Corrective Action Controls ⁵
		Consequences:		
				1.
				1.
Review/Communicate with Affective Staff (list names):				
Next Scheduled Revision or Update (review annually or when necessary):				

Risk Matrix

Major:

Any incident that may cause: fatality lost time, catastrophic failure, or loss of equipment or building. Environmental event that is catastrophic or is requiring extraordinary means to remedy.

Serious:

A medical treatment by a doctor, but does not result in a lost time. Equipment is not usable, but can be repaired. Environmental damage requires specialized equipment or tools to clean up.

Minor:

An incident that does not require outside medical attention. Equipment was damaged, but can still be used. Environmental spill can be easily cleaned up.

Severity

Major

Serious

Minor

1	1	1
2	2	1
3	2	1
Low	Medium	High

Frequency

Chance of occurring is indiscernible from zero

Possibility of occurring in 3 years

High probability of occurring in 3 years

- Do not proceed** – Risk is too great.
- Do not proceed**- Job will require engineering controls, administrative controls, or specialized PPE. Proceed only after risk has been addressed.
- Proceed** with caution. Standard PPE may be required to carry out task.