

Recognition, Evaluation, and Control of Hazards

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1.0 Introduction

Memorial University has established a system for the recognition, evaluation, and control of hazards that includes:

- Evaluation and monitoring of the workplace to identify potential hazards and associated risks;
- Procedures and schedules for regular inspections by management and committee members;
- Procedures for the identification, reporting, and control or correction of hazards;
- Procedures for the prompt investigation of hazardous occurrences to determine the cause of the occurrence and the actions necessary to prevent a recurrence; and
- Measures for the accountability of Memorial University staff responsible for the reporting and correction of hazards.

2.0 Definition

Hazard: A condition or practice with the potential for harm or damage to people, process, equipment, materials, or the environment.

As defined by the WSIB, a hazard is *significant* when, if not properly controlled, it has the potential to cause a lost-time injury or occupational disease.

There are two major categories of hazards – health hazards and safety hazards. Workers are expected to be familiar with the different types of hazards commonly found in their workplace and the ways of controlling them. Examples of health hazards include:

3.0 Health Hazards

3.1 Chemical Hazards

- gases – hydrogen cyanide, carbon monoxide, methane
- vapours – gasoline, propane
- dust – asbestos, silica
- solvents – cleaning agents, turpentine
- fumes – welding, asphalt
- smoke – tobacco, surgical smoke
- mists – paint spray, pesticides

3.2 Biological Hazards

- bacteria, viruses, blood borne pathogens,
- fungus and molds, and parasites

3.3 Physical hazards

- noise, temperature, radiation, vibration,

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- indoor air quality, and illumination (lighting)

3.4 Ergonomic hazards

- excessive force – lifting, pushing, or pulling heavy loads
- repetitive movements – working on a high paced production line
- awkward postures – bending, reaching, twisting
- duration – time a task is performed (continuous or over a prolonged period)

3.5 Common examples of general safety hazards include:

- Machine hazards – moving or hot parts, absence of guards, poor maintenance
- Materials handling - mechanical materials handling, lifting, lowering, carrying, pulling, shovelling
- Handling hazardous materials - flammable, reactive, explosive and/or corrosive substances
- Confined spaces - places not intended for human occupancy such as places with restricted entry or exit or where hazardous atmospheres exist
- Work practice hazards – working from heights
- Poor housekeeping

3.6 The hierarchy of health and safety controls for workplace hazards will be followed by Memorial University.

3.7 Hierarchy of Safety & Health Controls - From Most Effective to Least Effective

3.7.1 Elimination or Substitution

- substitute safe materials for hazardous ones
- reduce energy, speed, voltage, sound level, force
- change process to eliminate noise
- perform task at ground level
- automate material handling

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3.7.2 Engineering Controls

- ventilation systems
- machine guarding
- sound enclosures
- circuit breakers
- platforms and guard railing
- lift tables, conveyors

3.7.3 Warnings and Alarms

- computer warnings
- odors
- backup alarms
- labels

3.7.4 Training and Administrative Controls

- safe job procedures
- rotation of workers
- safety equipment inspections
- worker training
- lockout

3.7.5 Personal Protective Equipment

- safety glasses
- hearing protection
- face shields
- safety harnesses

(Note on PPE: The least effective method of controlling a risk is to require employees/or students to wear protective equipment (e.g., eye protection, ear plugs). This control method relies on employees or students wearing the equipment as a barrier between the individual and the hazard, and on the equipment always being available in good condition and worn correctly. It is obviously much better if the hazard has been removed so that employees and students are not exposed in any way to the potential danger).

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4.0 The Steps of Risk Assessment

- 4.1 The person who is responsible for a task, a project, or work area must make sure it is safe. That is, they must identify the environmental or occupational health and safety risks and make sure these risks are controlled. A control is something that is put in place to eliminate, minimize, or treat the risk.

The process of identifying, assessing, and controlling risks must be done in consultation with staff. This process is:

- Identifying hazards
- Assessing risk presented by hazards
- Controlling risk
- Monitor controls to make sure they are working

Risk Management is integral to Occupational Health and Safety legislation which imposes an obligation on employers to undertake the risk management process in consultation with employees.

4.1.1 Step 1 - Identify the Hazard

Hazards at Memorial University related to:

- Microbiological Hazards
- Chemical Hazards
- Electrical Hazards
- Communicable Diseases
- Noise
- Manual Materials Handling
- Plant and Equipment Hazards
- Sharps and Needlestick Injuries
- Radiation Hazards
- Slips, Trips and Falls
- Office Workstations and Layout
- Air Quality and Temperature

4.1.1.1 Hazards are usually linked to activities, so look at the activities, tasks, or projects undertaken in your workplace and ask yourself: "What types of hazards are present?" Thinking about the work environment where tasks are carried out can help identify hazards.

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It is often useful to list the steps involved in a task or project. Breaking the activity into steps can make hazard identification simpler.

4.1.2 Step 2 - Assess Risk to Determine Potential Likelihood and Consequence

4.1.2.1 Once hazards have been identified, assess the level of risk. It should be determined how likely it is that someone could be harmed by the hazards and how serious the injury or illness could be.

First, consider the:

Severity of the consequences of an accident occurring - how serious would the injury or illness be and how many people are at risk?

Likelihood of the accident occurring –

- has it happened before?
- how often might it happen?
- when is it most likely to happen?

NOTE: Consider what is already in place to control risk when estimating consequence and likelihood. For example, personal protective equipment may be used or guarding may be in place. Think also about the way different hazards linked to an activity may interact to affect the severity or likelihood of an accident occurring.

4.1.3 Step 3 - Controlling the Risk

4.1.3.1 Based on the level of risk presented by the hazards identified, decisions can be made about the best way to remove the risk, or if not 'reasonably practicable', to lessen the risk of harm to the lowest possible level.

A range of strategies should be considered in controlling the risk. Use the hierarchy of controls to determine the actions that can be taken to eliminate or control hazards. Eliminating the hazard is the preferred action, whereas PPE (Personal Protective Equipment) is the option used when there is no other solution.

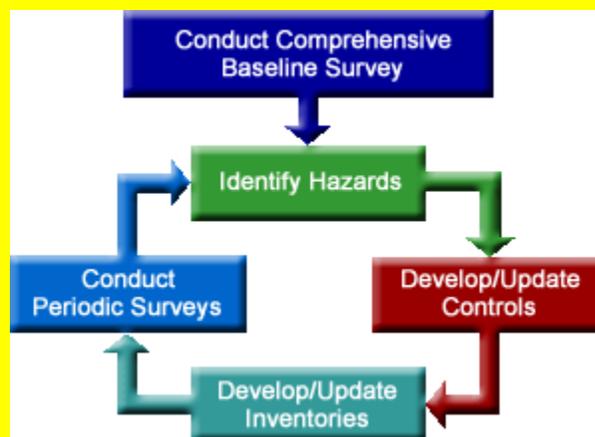
4.1.3.2 Supervisors must inform staff and students of hazards in the work area and set up appropriate procedures to prevent harm from occurring. The amount of information, training, and supervision required depends on the level of risk.

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4.1.3.3 Hazard analysis involves a variety of work site examinations to identify not only existing hazards, but also conditions and operations in which changes might create hazards. Effective management actively analyzes the work and the work site to anticipate and prevent harmful occurrences.

5.0 Hazard Analysis

5.1 Memorial University will utilize the risk assessment technique of Job Hazard Analysis (JHA) to identify specific job risks and appropriate controls.



5.2 Serious (critical risks) will be targeted for structured, written hazard analysis. The following definitions will be used to determine the risks associated with specific jobs within the University community. The steps in JHA include:

- identify work and hazards associated with that work, and classify hazards
- identify hazard controls that need to be in place to limit the risk to acceptable levels

5.3 High Risk: A risk that has the potential to result in fatality, a serious injury (see definition of serious injury in Accident/Incident investigation and Reporting), or property and equipment damage over \$5,000.00

5.4 Medium risk: A risk that has the potential to result in a lost time injury or property and equipment damage over \$1,000.00.

5.5 Low risk: a risk that has the potential to result in a medical treatment or first aid case and property or equipment damage of less than \$200.00

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Legislative reference: OH&S Regulations: Part III, G (i) to G (vi).

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