

Appendix A Safety Hazard Identification and Risk Assessment Procedure

This procedure is based on the CSA Standard Z1002-12 "Occupational Health and Safety - Hazard Identification and Elimination and Risk assessment and Control," and the model used by the Public Services Health and Safety Association.

The Process includes four steps:

1. Identify Hazards;
2. Assess Risk;
3. Control Hazards; and
4. Monitor and review.

The Safety Hazard Identification and Risk Assessment Form (Appendix B) is used for recording safety hazard risk assessments.



1. When to Conduct Safety Risk Assessments

Formal risk assessments are required when activities involve moderate to high levels of risk, such as those involving:

- Risk of injury/harm;
- Using new equipment or hazardous substances;
- Required by legislation; and
- Newly identified risks.

Formal risk assessments are not generally required for low risk activities, such as those typically involving:

- Little to no safety hazards identified;
- Little to no risk of injury;
- Very short/brief exposure periods; or
- Classrooms and offices.

2. Safety Risk Assessment Steps

2.1 Step One: Hazard Identification

Identify any potential hazardous situations or job tasks that can result in a person being harmed. The hazard identification process includes, but is not limited to:

- Reviewing the equipment, tasks/activities and materials involved;
- Reviewing past incidents/accidents/near misses; and
- Recording hazards on the Hazard Identification and Risk Assessment Form

2.1.1 Safety Hazard Categories

Safety hazards are categorized into the following general categories:

A) Chemical Hazards

Chemical hazards can have adverse health effects such as toxicological, irritation, sensitization, carcinogenic, mutagenic or reproductive responses. Primary exposure is through inhalation, although skin contact (including absorption through intact skin and injection) as well as ingestion are possible. Chemical hazards can exist as solids, liquids, aerosols (dust, fume or mist), gas or vapours.

B) Biological Hazards

Microorganisms such as bacteria, viruses, mould, fungi, parasites and plant or animal agents with potential for causing toxicological effects. Exposure to microorganisms may occur through ingestion, inhalation or through injection (e.g. needle sticks) or contact with mucous membranes.

C) Physical Hazards

Physical hazards are physical elements that can have an adverse physical or physiological effect on a person. Physical hazards include:

- Musculoskeletal:
 - Hazards from poorly arranged or designed equipment and ergonomic factors including force, repetition and awkward postures.
- Environmental:
 - Hazards from radiation (ionizing and non-ionizing), heat and cold, noise, vibration, wind, lightning.
- Mechanical:
 - Hazards that can cause injury from the physical action of machinery, machine parts, tools or loads and includes entanglement, pinch points, friction/abrasion, cutting, contact with or by moving parts or flying objects, crushing and pressure systems.
- Electrical:
 - Hazards from contact with live/energized parts.
- Slip, trip and fall:
 - Hazards from slippery surfaces, poor housekeeping.

D) Psychosocial

Psychosocial hazards are from risk of violence, harassment, production pressures.

2.2 Step 2: Assess Risk

Rating the safety risk helps prioritize the implementation of control measures where the Risk Level is determined by multiplying the likelihood of the safety risk occurring by the degree of harm the hazard may pose.

Risk Level = Probability x Severity
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2.2.1 Determining Probability

Estimate how likely or probable it is that the hazard will cause injury, illness, or damage to property. Consider the nature of the exposure; frequency and duration of exposure time (e.g. Daily, weekly, monthly); number of workers exposed and their level of training)

Probability Ranking	
Rank	Description
Low	The hazard will probably not occur cause injury or harm.
Medium	There is a chance the hazard will occur and cause injury or harm.
High	Injury or harm from this hazard is very likely to occur

2.2.2 Determining Severity

Estimate how severe the injury or harm could be from each hazard and consider:

- What type of harm will occur (e.g. strain, cuts, burn, amputation, fracture);
- Contributing factors to the risk;
- The working environment, including layout and condition; and
- The capability, skill, experience and age of people performing the activity or working with the equipment.

Severity Ranking	
Rank	Description
Minor	The hazard could only cause minor injury or illness with little or no lost time from work.
Moderate	The hazard could cause moderate injury, illness and/or property damage requiring more than first aid (medical attention, able to return to work)
Major	The hazard could cause fatal or serious injury, illness and/or property damage resulting in permanent or long-term disability or significant loss.

2.2.3 Calculating Risk Level

Once you have determined the probability and severity use the Risk Assessment Chart to determine whether the Risk Level is low, medium or high and record for each hazard on the Safety Hazard Identification and Assessment Form.

Risk Assessment Chart				
		Probability		
		High	Medium	Low
Severity	Major	High	High	Medium
	Moderate	High	Medium	Low
	Minor	Medium	Low	Low

2.2 Step 3: Control Hazards

All hazards that have been assessed should be dealt with in order of priority based on Risk Level, using the following hierarchical order of control measures:

A) Elimination:

- Control the hazard at the source by removing the exposure and probability/likelihood of an occurrence.

B) Substitution:

- Reduce the risk by substituting the materials, processes or equipment with less harmful ones (e.g. lower toxicity, lower flammability, reduced energy, lower weight etc.)

C) Engineering controls:

- Reduce risk by reducing the probability of a hazardous occurrence by:
 - Preventing or limiting access or exposure to a hazard (e.g. ventilation systems, interlocks, machine guards, enclosures) or
 - Providing alternate means of interacting with the hazard.

D) Administrative Controls:

- Reduce the probability of harm by restricting access to, or use of equipment by competent and/or qualified individuals, training, safe work procedures, Safety Data Sheets, work scheduling, work-rest breaks. Increase hazard awareness using warning signs and labels and, visual and audible alarms.

E) Personal Protective Equipment (PPE):

- Generally considered to be the "last resort" for protection, PPE is used to reduce the severity of harm (does not reduce the probability) when the hazards cannot be effectively controlled using other methods.

Examples of PPE include protective footwear, protective eye/face wear, hearing protection, respirators, gloves, protective clothing.

Control measures must be evaluated for effectiveness to ensure they sufficiently reduce the risk of injury or harm.

2.4 Step 4: Monitor and Review

Risk assessments and risk control is an on-going process that requires monitoring and review to ensure workers are effectively protected.

Risk assessments must be reviewed:

- On a regular basis (that may vary depending on the level or risk);
- When controls are not working effectively;
- If there is a change in legislation, standards or other requirements; and
- Anytime there are modifications to the work area (activities, equipment, material, etc.) which could result in a change to the hazards or risk level.

2.5 Inquiries

Inquiries regarding this policy should be directed to the Occupational Health & Safety Consultant.