

HAZARD RECOGNITION EVALUATION and CONTROL

What is a hazard?

Hazard - a dangerous object, event, behaviour or condition (in the workplace) which has the potential to cause injury, illness or property damage.

Hazard Recognition Evaluation and Control promotes a healthy and safe work environment through identifying, evaluating (commonly referred to as assessing) and controlling hazards.

The goals of Hazard Recognition Evaluation and Control are to:

- prevent injury, illness and property loss
- meet legislative requirements
- evaluate and prioritize hazards and risk
- provide a basis for the implementation and monitoring of controls
- ensure systems are in place to control hazards
- increase workers' awareness of hazards and risk
- establish a formal procedure for hazard reporting
- provide baseline data for monitoring the OH&S program

Refer to sections 12(1)(e) and (g) of the OH&S Regulations

In order to eliminate, reduce or control hazards employers are required to have a plan to orient and train workers and supervisors in the following:

- safe work practices
- plans
- policies
- procedures

Employers must have a system developed and implemented for the workplace including:

- evaluating & monitoring hazards and risks
- procedures & schedules for regular inspections
- procedures for identifying, reporting and controlling/correcting hazards
- procedures for investigation
- circumstances where the employer must report hazards to the OH&S Committee
- accountability for persons responsible for reporting and correcting hazards
- a plan for controlling biological and chemical substances

There are two types of hazards:

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1. Health

| Health Hazards | |
|----------------|---|
| 1. | Chemical - substances that can be a risk to the person who comes in contact with it or is required to handle it (i.e. gases (carbon monoxide, methane), vapours (gasoline, propane), dust (asbestos, silica), solvents (cleaning agents, turpentine), fumes (welding), smoke (tobacco) and mists (paint spray, pesticides) |
| 2. | Physical - conditions which are hazardous when levels exceed established safe guidelines (i.e. noise, extreme temperatures (heat and cold), radiation, vibration, indoor air quality, illumination (lighting) and pressure (inadequate or excessive atmospheric force on the body; may be an issue when diving or flying) |
| 3. | Biological - any living organism which can cause adverse health effects in humans (i.e. viruses (HIV), blood borne pathogens (hepatitis C), other body fluids (urine, saliva), bacteria (salmonella; e-coli), fungi and molds and parasites (found in dogs and calves) |
| 4. | Ergonomic - the type of work, body position and working conditions puts a strain on your body and the musculoskeletal system (i.e. excessive force (lifting, pushing or pulling heavy loads), repetitive movements (working on a high paced production line), awkward postures (bending, reaching, twisting) and duration (continuous; over a prolonged period) |

2. Safety

| Safety Hazards | |
|----------------|---|
| 1. | Machine hazards (i.e. rotating or moving equipment, hot parts, absence of guards and poor maintenance) |
| 2. | Energy hazards (i.e. electricity, steam, heat, pressure, gravity, mechanical, chemical, kinetic and potential) |
| 3. | Confined space hazards A confined space: <ul style="list-style-type: none"> • Is an enclosed or partially enclosed space that is not designed or intended for human occupancy except for the purpose of performing work; • has restricted means of access and egress; and • may become hazardous to a person entering it as a result of (i) design, construction, location or atmosphere, (ii) materials or substances in it, or (iii) any other conditions relating to it. |
| 4. | Fall hazards – working at heights; working over water or floor/ground openings; slips, trips and falls |
| 5. | Material handling hazards – mechanical materials handling and handling hazardous materials |
| 6. | Work practice hazards – failing to identify and controls hazards and risks; failing to develop or follow safe work practices and procedures; poor housekeeping (i.e. improper storage area, high stacking, grease on the floor) |
| 7. | Electrical hazards - lights, live wires, static electricity, other electrical equipment and sparking tools |
| 8. | Entrapment/engulfment - free flowing solids or drowning in liquids, storage bins with fine substances, grain in a silo, water in a tank, soil falling into a trench or excavation |
| 9. | Workplace violence and/or working alone |

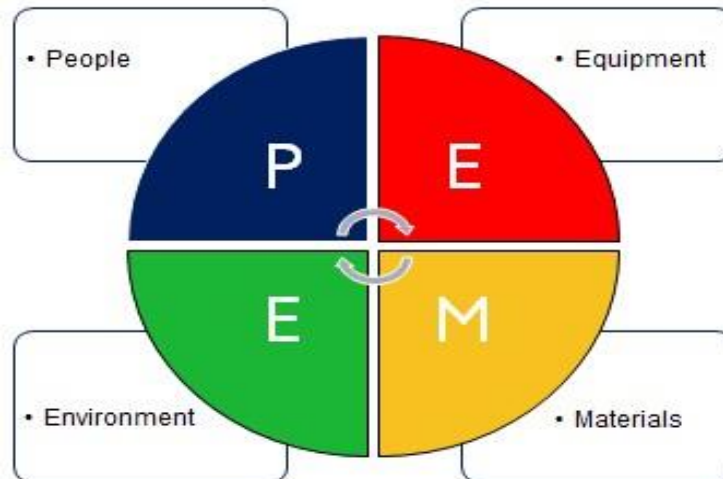
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Occupational illness or disease

Occupational illness or disease is:

- a health issue that results from exposure to workplace health hazards
- may be acute or could develop after many years of exposure
- there is no cure for many occupational illness or diseases
- Examples are:
 - Silicosis
 - Occupational asthma
 - Asbestosis
 - Occupational dermatitis
 - Noise-induced hearing loss

There are several factors which contribute to hazards in the workplace.



People are not just limited to workers. There are many groups of people who contribute to hazards in the workplace.

Examples include:

- workers
- supervisors and managers
- contractors
- customers
- visitors

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- suppliers
- general public
- engineers and designers
- individuals involved in preventative maintenance
- human resources personnel

Equipment is often a source of potential hazards.

Examples include:

- tools
- machinery
- vehicles
- materials handling devices
- personal protective equipment (PPE)

Materials used in the workplace can also be a contributing factor and includes raw materials.

Examples include:

- wood
- steel
- plastics
- glass
- chemicals used in production processes

Environment encompasses both the physical and non-physical aspects of the workplace.

Examples of physical factors include all parts of the work surroundings, including:

- buildings and enclosures that surround people, equipment and materials
- fluids and air that surround people, equipment and materials
- chemical hazards
- physical hazards
- biological hazards
- ergonomic hazards

Examples of non-physical environmental factors include

- leadership style
- business/organization and community culture
- marketplace factors
- regulatory or legislative issues
- organizational and management systems which include policies, procedures, and work practices

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Hazard Recognition

Some ways to recognize potential hazards are:

- legislation
- hazard assessments
- workplace inspections
- incident investigation
- (Material) Safety Data Sheets - (M)SDS
- task analysis
- work processes
- past experiences
- WHSCC documents
- manufacturer's operating manuals
- surveys and input from employers, supervisors, contractors, workers and Committee/Representative/Designate
- professional assistance

Evaluation Process

Risk is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard.

It may also apply to situations with property or equipment loss.

Risk assessment is the process where you:

- identify hazards,
- analyze or evaluate the risk associated with that hazard
- determine appropriate ways to eliminate or control the hazard

Measuring the level of risk to workers takes into account:

- the severity of the potential destructive consequences of the hazard
- the probability of an incident occurring as a result of the hazard

When evaluating potential risk consider the severity of the risk and probability of the hazard.

To determine the severity of the hazard, you may ask:

- Could this hazard cause death or loss of a facility?
- Could this hazard cause a severe injury, severe occupational illness or major property damage?
- What type of harm is involved?

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- Could this hazard cause a minor injury or occupational illness resulting in lost workday(s) or minor property damage?
- Could this hazard cause an injury which would result in less than a lost work day with no property damage?

To determine the probability of injury, illness or property damage you may ask:

- Is an injury, illness or property damage likely to occur immediately or within a short period of being exposed to the hazard?
- Is it likely an injury, illness or property damage will occur in time?
- Is it unlikely an injury, illness or property damage will occur?
- Is there a history of problems, hazard reports pertaining to a situation or work activity?

Answering these questions will assist you in determining the most effective hazard control to put in place and the priority with which the hazard must be addressed. Risk assessments may come in various formats and vary by organization and complexity.

When conducting a risk assessment, review the following to ensure all hazards have been considered and to determine what is required for compliance:

- review legislation (minimum requirements)
- *OH&S Act* and Regulations
- other legislation
- review standards
- industry standards and guidelines
- manufacturer's specifications

When assessing risk, you should rate the severity of the risk.

1. Minor:

- first aid only, no lost time

2. Moderate:

- moderate injury, illness or property damage

3. Major:

- serious bodily injury or property damage

4. Extreme:

- death or permanent disablement or loss of a facility/plant

You should also rate the probability of the risk. Is an injury, illness or property damage:

1. Unlikely:

- could happen but rare

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- 2. Likely:
 - could happen occasionally
- 3. Very likely:
 - could happen frequently

An example – risk assessment of a broken ladder:

The severity of a broken ladder is 2 (moderate), as the hazard could result in moderate injury, illness or property damage.

The probability of someone falling off the broken ladder is 1 (could happen but rare).

Severity (2) + Probability (1) = Risk (3). Possible outcome of a worker falling from a broken ladder is classified as moderate risk: do something about the risk as soon as possible!

Use the ratings for each risk to develop a prioritized list of workplace risks requiring action

The scores (1 – 9) indicate how important it is to do something about each risk

- 1 Low Risk: these risks may not need immediate attention
- 2-3 Moderate Risk: do something about these risks as soon as possible
- 4-6 High Risk: do something about these immediately
- 7-9 Severe Risk: reduce or eliminate these risks before work starts

| | Severity | Minor | Moderate | Major | Extreme |
|-----------------|---------------------------|------------------------------|----------------------------|-----------------------|------------------------------|
| | | (1) | (2) | (3) | (4) |
| | | First aid only, no lost time | Moderate injury or illness | Serious bodily injury | Death, permanent disablement |
| Probability | | | | | |
| Unlikely (1) | Could happen but rare | Low Risk (2) | Moderate Risk (3) | High Risk (4) | High Risk (5) |
| Likely (2) | Could happen occasionally | Moderate Risk (3) | High Risk (4) | High Risk (5) | Severe Risk (6) |
| Very Likely (3) | Could happen frequently | High Risk (4) | High Risk (5) | Severe Risk (6) | Severe Risk (7) |

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Controls

A control is a condition or practice that prevents or minimizes a potential hazard. When you select controls, use a method that identifies controls that provide the most protection for workers first then progress to those which provide the least protection. You must also select controls based what is reasonable and practical for workers and the workplace.

Hierarchy of controls

Engineering controls

- elimination (eliminate the hazard)
- substitution (reduce the frequency and/or effect of the hazard)
- change the initial design
- isolate the hazard
- ventilate the hazard

Engineering controls are the first line of defence against a hazard and do not require continuous intervention.

Administrative controls

- encourage safe work practices
- control workers' exposure by job rotation, work assignments, limited time spent in hazardous areas, limited time spent performing hazardous tasks
- establish safe operating procedures
- provide systematic and formal training

Administrative controls are our procedural controls. JHA's, SOP's, signage, training, etc. gives us the knowledge and skills we need to do the job safely.

Personal Protective Equipment (PPE)

- worn for protection from hazardous environments
- a barrier between people and the hazard
- used as the last resort when engineering and administrative controls do not provide an acceptable level of protection

If we rely on PPE to protect us, we set ourselves up for failure. PPE is our last line of defense against injury. After our engineering and administrative controls fail then our PPE is the only thing that stands between us and an injury. We must always try and engineer the hazard out!

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The diagram below summarizes the Hazard Recognition, Evaluation & Control process. Remember to recognize hazards, evaluate the risk associated with the hazard, put proper controls in place and monitor the control once it is implemented.

HAZARD ASSESSMENT PROCESS

