Hazard Identification and Risk Management Element

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1.0 Purpose

The Hazard Identification and Risk Management element outlines the process for identifying hazards and steps required to manage associated risks. Memorial University of Newfoundland (university) recognizes that all members of the university community have a right to a healthy and safe work and study environment. The university strives to develop a health and safety culture with special emphasis on the prevention of injuries, illnesses and violence in the workplace. Hazard identification is the cornerstone of any health and safety management system (HSMS), as hazards that are not identified cannot be eliminated or controlled. The objective is to reduce risk to as low as reasonably achievable (ALARA).

2.0 Scope

All occupations, processes and activities whether routine or non-routine, conducted on university property or on behalf of the university, will be assessed for risk to employees, operations, the environment and stakeholders.

3.0 Definitions

Acceptable Risk: Risk that has been reduced to a level that can be tolerated by the organization having regard for its legal obligations and its own Health and Safety policy.

Consequence: The likely outcome if an incident/exposure occurs. Hazards may lead to a variety of potential consequences.

Control: A measure taken to reduce and/or eliminate the risk of harm or damage to people, process, equipment, materials, or the environment. Control tools include: Elimination, Substitution, Engineering/Isolation, Administration/Training and PPE (refer to Section 6.0 - Hierarchy of Controls).

Field Level Risk Assessment (FLRA): Review of a Job Hazard Analysis (JHA) prior to start of work to identify any hazards not previously identified, evaluated and controlled.

Hazard: A source, situation or act with the potential for harm or damage to people, process, equipment, materials, or the environment (see JHA form for examples of common hazards).

Inherent Risk: The risk that an activity would pose if no controls or other mitigating factors were in place.

Residual Risk: The risk that remains after controls are taken into account.

Risk Assessment (RA): Documented process of identifying hazards, evaluating the risk arising from hazards in the workplace, taking into account the adequacy of existing controls and evaluating whether or not the risk is acceptable.

Risk: Combination of the probability/likelihood of an incident/exposure occurring and the consequence/severity of the resulting incident/exposure.

Risk Register: Documented list of hazards, risks and associated ratings, key risk indicators, controls (either planned or in place) and the status of these risks.

Job Hazard Analysis (JHA): Step-by-step procedure for recognizing, evaluating and controlling hazards associated with specific activities (jobs) in the workplace. In a JHA each basic step of the job is evaluated in order to identify potential hazards and to recommend the appropriate control measures to be implemented.

Risk Management: Management of risks in the workplace through hazard/risk analyses and control implementation.

Worker: As per the provincial *Occupational Health and Safety Act*, a person engaged in an occupation with either the university or a Contractor.

4.0 Roles and Responsibilities

Risk management is a shared responsibility at all levels of the university. A comprehensive list of EHS roles and responsibilities is provided in the HSMS manual. The responsibilities with respect to hazard identification and risk management are summarized below.

4.1. Senior Executives, Deans and Directors

Including Unit Heads and Managers will ensure:

- This element is communicated to all members of the university under their direction and that compliance is maintained;
- That adequate resources are available to implement appropriate measures;
- This element is implemented and maintained within their areas of responsibility and that risk registers and JHAs are developed in accordance with this element, including identification of the hazards, evaluation of the risk and implementation of controls to minimize or eliminate hazards;
- That documents created as part of this element are created, maintained and disposed of in compliance with the Document and Record Management element (HSMS – Documents & Record Management – v1); and
- Monitor the adequacy and effectiveness of this element and make recommendations for improvement to EHS.

4.2. Supervisors

Will ensure:

- They are an active participant in the development of a risk register and creation of JHAs for areas under your supervision and control;
- All members of the university community, under their supervision, are aware of the hazards in the workplace and that they have received the appropriate training to undertake a task;
- All those under their supervision complete field level risk assessments as outlined in section 5.4.;
- Risks associated with the activities they supervise are managed; and
- Monitor the adequacy and effectiveness of this element and make recommendations for improvement to EHS.

4.3. Workers

- Comply with this element and participate in hazard identification and risk management activities and training as required; and
- Report any conditions that could lead to unsafe conditions to their supervisor.

4.4. Workplace Health and Safety Committees

Support the implementation of this element, monitor the adequacy and effectiveness of this element and make recommendations for improvement to EHS.

4.5. Members of the University Community

Must:

- Comply with this element and participate in hazard identification and risk management activities and training as required; and
- Report any conditions that could lead to unsafe conditions to their supervisor.

4.6. Environmental Health & Safety (EHS) Unit

Will provide guidance to all levels of management, employees and students on matters pertaining to hazard identification and risk management.

EHS will ensure that this procedure and the university's safety risk register is periodically reviewed and updated as necessary.

5.0 Procedure

5.1. Risk Register

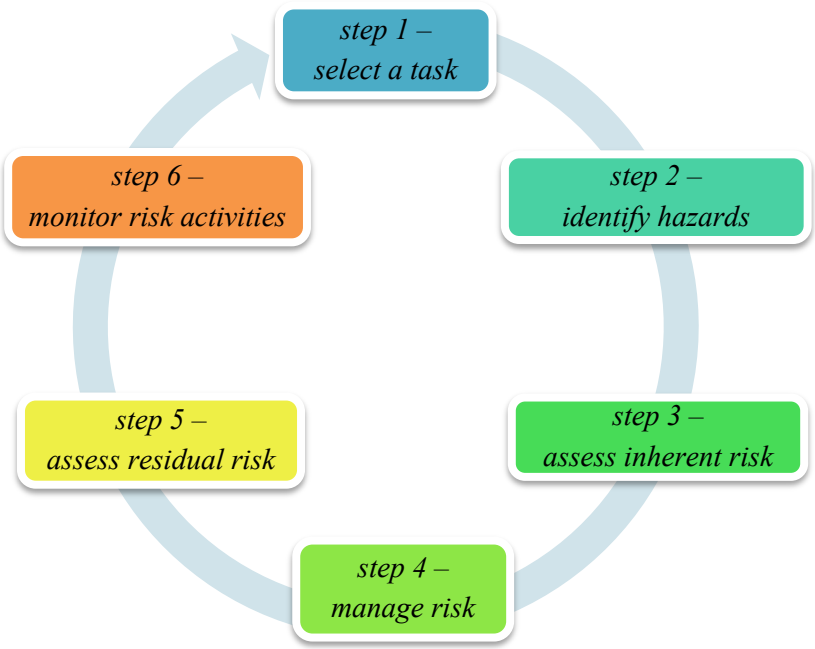
Individual units are responsible for the development and maintenance of a risk register for areas within their responsibility. Risk registers must include the following categories:

- Specific hazard i.e. chemical, biological, radiation, asbestos, electrical etc.;
- Description of the hazard;
- Inherent risk rating;
- Applicable legislation, standards, codes and university procedures;
- Implementable controls; and
- Residual risk rating.

A high-level risk register has been developed for university wide hazards. This risk register serves as a repository of hazard/risk/control information which can be used for units developing unit specific risk registers and job hazard analysis.

5.2. Hazard Recognition and Risk Management process

The hazard recognition and risk management process can be best illustrated in the following way.



5.2.1 Select a Task

List the tasks required to complete each activity.

5.2.2 Identify Hazards

List hazards that may be encountered during each task, and the events that may cause an injury or illness.

- Ensure that all aspects of job are considered, including routine & non-routine activities.
- Review records of incidents and near-misses related to the specific task.
- Look at the way the work is done and consider all foreseeable unusual conditions.
- Examine risks to various members of the university community.

Determine Incident and Exposure types:

- violence and injury caused by a person or animal
- transportation incident
- fire or explosion
- slip, trip, fall
- exposure to harmful substance or environment
- contact with object or equipment
- overexertion

Classify the Nature of the Injury

- trauma or musculoskeletal disorder
- fracture, wound, burn
- systemic disease or disorder
- heart attack, asbestosis, hernia
- infection or parasitic disease
- hepatitis, rabies
- cancer
- psychological disorder

5.2.3 Assess Inherent Risk

Inherent risk is the risk that an activity would pose if no controls or other mitigating factors were in place. When determining risk rating for an activity the objective is to determine the probability or likelihood of hazardous event or exposure (i.e. almost certain, likely, possible, unlikely, almost impossible) along with the severity of the event/activity. Severity of an event or activity can range from injury, but no treatment required to loss of life.

The university has established a Risk Framework to provide guidance on assessing and managing risks to an acceptable level while ensuring the strategic goals of the university are met.

5.2.4 Manage Risk

If inherent risks are within the risk appetite of the university as per the Risk Framework, then no further action is required. If the risk rating for an activity exceeds the risk appetite, then additional controls must be introduced and assessment of the residual risk is required.

5.2.5 Assess Residual Risk

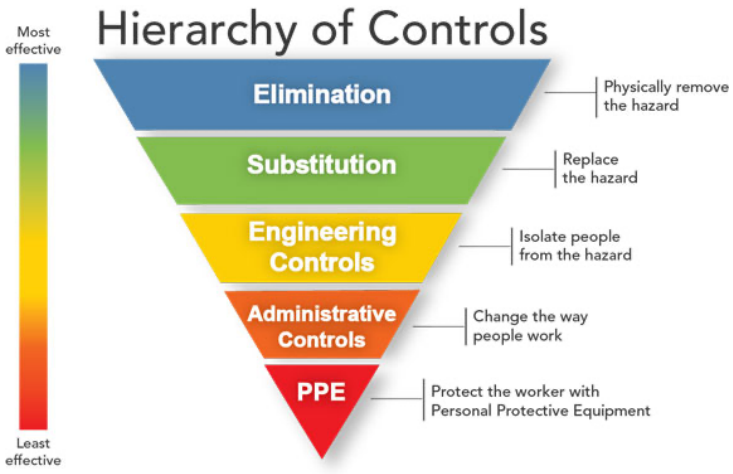
Residual Risk is the risk remaining after existing controls are taken into account. The most effective controls are those that eliminate the hazard and associated risk. Once control measures are implemented the risk rating of the activity must be reevaluated and compared to the risk appetite of the university.

5.3. Field Level Risk Assessment (FLRA)

Prior to the start of an activity a review of the risk register is required and any hazards not previously identified must be evaluated and controls implemented. This process is referred to as a Field Level risk Assessment FLRA. New hazards can be added to the existing risk register and all those involved in the activity must be made aware of any additions/revisions to the risk register. All participants of the FLRA must sign and date the FLRA. FLRA template is included in this element, units can customize as needed.

6.0 Hierarchy of Controls

There are a wide variety of control types to minimize or eliminate exposure to hazards, each having a particular use. The implementation of hazard controls is a management responsibility. Supervisors are required to understand how to effectively eliminate and minimize hazards. Below is an illustration of the various control types:



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7.0 Monitor Risk Activities

Monitoring and auditing activities provide an opportunity to evaluate existing processes and determine if they are effective in controlling risk. Examples of monitoring activities include inspections, risk register reviews and audits etc.

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Appendix A: Risk Register Template

Step 1: Context			STEP 2: IDENTIFY HAZARDS				STEP 3: ASSESS THE RISKS (no controls - inherent risk)			STEP 4: CONTROL			STEP 5: ASSESS THE RISKS (with controls identified in step 4 - residual risk)			STEP 6: Monitor		
Dept.	Activity	Task	Description of Hazard/Risk	Incident / Exposure	Consequence	Legal Reqt	Probablity of Occurance	Consequence	Risk Scoring	Controls			Probablity of Occurance	Conseq.	Risk Scoring	Monitoring	Actions	Due Date
										Engineering	Administrative	PPE						

Appendix B: Field Level Risk Assessment Template

Job Hazard Analysis (JHA)

Rev 4

Supervisor: _____

Activity:			**Location:**			**Date:**	
Tasks in Activity	Associated Hazards	Risks	Proposed Hazard Controls	Residual Risk (with Controls)			
				P	C	Risking Rating	Control Implemented
Date	**Name (Print and Signatures of team members who have participated and/or reviewed this JHA**						

Appendix C: Risk Assessment Scoring Matrix

Risk Assessment Scoring Matrix						
		Severity				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Safety		•No Injury	•First Aid / Medical Aid	•Lost Time Injury (LTI)	•Permanent Disability	• Fatality
Health		•Reversible health effects (e.g. dizzy, headache, minor irritations, etc.) •Comparable to report only •Below detectable limits	•Reversible health effects (e.g. skin, eye, mucous membrane, sun burn etc.) •Comparable to first aid or medical-aid •Below action limits	•Serious reversible health effects (e.g. MSD, heat exhaustion, vibration effects, etc.) •Comparable to LTI •Between action limits and OELs	•Irreversible health effects and illness (e.g. hearing or respiratory impairment, etc.) •Above OELs	• IDLH - Immediately Dangerous to Life & Health (e.g. asphyxiation, poisoning, etc.) • Severe life shortening illness (e.g. carcinogens, mutagens, etc.)
Probability of Occurrence	**Almost Certain** Expected to occur most times	**Moderate**	**Moderate**	**High**	**Very High**	**Very High**
	Likely Probably occur most times (1 in 10)	**Low**	**Moderate**	**High**	**High**	**Very High**
	Possible Should occur sometimes (1 in 100)	**Low**	**Low**	**Moderate**	**High**	**High**
	Unlikely Could occur at some times (1 - 1000)	**Very Low**	**Low**	**Low**	**Moderate**	**Moderate**
	Almost Impossible May only occur at exceptional times (facility lifetime)	**Very Low**	**Very Low**	**Low**	**Low**	**Moderate**

Time Frame	Risk Appetite - Action Required
Immediate	Very High: Immediately dangerous: stop the process and implement controls
Immediate	High risk: investigate the process and implement controls immediately
1 months	Moderate risk: keep the process going; however, a control plan must be developed and should be implemented as soon as possible
3 months	Low risk: keep the process going, but monitor regularly. A control plan should also be investigated
6 months	Very low risk: keep monitoring the process

Some Useful prompts when Assessing Hazards			
Slip / trip / fall hazards	Restricted access /egress	Voltage	Unstable Objectives
Chemicals /pollution / contaminants	Weak structures	Noise	Explosives
Moving parts of machinery / vehicles	Ship heave or roll	Fumes / noxious gases	Weather conditions
Pressure / vacuum	Crane operations	Manual handling	Bacteria, virus, disease
Working over side	Vibration	Low / high temperature	Dangerous animals
Dust	Sparks / material from welding/grinding	Radiation	Task with repetitive strain
Position and entrapment	Flammable materials	Hydrocarbons	
Lighting levels	Moving / swinging objects	Posture	