Hazard Identification and Risk Assessment Procedure

Document # 1101.01 – Rev. 1 (October 2023)

Office of the Chief Risk Officer

uOttawa.ca

uOttawa

Contents

Version Control Table

Version Number	Owner	Approver	Change Summary	Status
1	OCRO	OCRO	New	N/A

1. Document overview

Purpose and scope

The Hazard Identification and Risk Assessment Procedure ("the procedure") outlines the University of Ottawa's expectations and requirements for management of occupational health and safety (OHS), specifically for key risk areas. This document establishes the minimum mandatory requirements and considerations for the relevant stakeholders based on functional needs.

The procedure applies to uOttawa employees and meant to serve as a reference for stakeholders at uOttawa. It doesn't apply to critically disruptive hazards (e.g., earthquakes, public health outbreaks, major weather events, etc.); contact the Office of Emergency Management for additional information.

Terms and definitions

For the OHS terms and definitions applicable to the documents in the OHS Management System, see the OHS Glossary.

Responsibilities

Responsibilities for roles applicable to this procedure, including supervisor and worker, are detailed in the General OHS Program Manual and Administrative Procedure 14-1 (Internal Responsibility Procedure for Health and Safety Issues).

Reference documents

- General OHS Program Manual

2. Hazard identification and risk assessment

Supervisors of projects or workspaces must conduct a hazard identification and risk assessment (HIRA) at the start of a project, as well as during a project following significant changes, to identify, evaluate and mitigate potential hazards and risks. The assessment ensures that users conduct proper project and workspace planning, become aware of potential hazards and implement hazard and risk controls.

The hazard identification should be carried out by a competent person or multidisciplinary team with good knowledge of the hazards identified that has assessed situations likely to occur and protective measures to control hazards and risks.

Assessments must be documented using the Office of the Chief Risk Officer (OCRO) risk assessment form provided.

Hazard identification and risk assessment steps

You **must** follow **these steps** when conducting a hazard identification and risk assessment:

1. Project and workspace planning
2. Hazard identification
3. Risk assessment
4. Risk evaluation and control
5. Escalation or receipt of assessment approval

Additional steps may be required based on the project or work scope.

STEP 1: Project and workspace planning

Key activities

- Outline the context of the work being performed and document the details and plan using the risk assessment form.

Establishing context

At the beginning of the risk assessment, the assessor (usually the supervisor) must establish the proper context through project and/or workspace planning. This includes the completion of the project or workspace plan, which includes:

- Activity — the overall lifecycle of the project or workspace, including physical working area, location, equipment and materials involved
- Purpose — intention of the project or workspace
- Timeline — overall timeframe of project or workspace, including core working hours and start and finish dates
- Stakeholders — those involved in the project or workspace, including who is internal or external and how each stakeholder is involved
- Approval and review — approval from the appropriate supervisor and relevant parties

STEP 2: Hazard identification

Key activities

- Identify the work hazards present, including reviewing existing hazard identification and risk assessments (HIRA) and standard procedures in place.
- If the hazards of the specific work haven't been assessed through the completion of a HIRA or equipment/activity- specific procedure (that includes the outcome of a HIRA), conduct a HIRA with reference to this procedure.
- Fill in the risk assessment form with the details of the identified hazards.

Establishing context

Supervisors of projects and workspaces on uOttawa premises must identify and evaluate current and potential hazards at the site through a preliminary qualitative survey. Consult workers and relevant health and safety committees to identify additional hazards that may be present.

Based on the findings of the preliminary hazard survey, address identified hazards as follows:

- Review any existing assessment of the work hazards (e.g., prior HIRA and associated standard procedures conducted).
- If an assessment or standard procedure doesn't exist, conduct a HIRA utilizing this procedure.

The core element of the risk assessment process is identification of items or processes that can cause harm. Consider the following (non-exhaustive) list when reviewing the project or workspace:

- Aspects and lifecycle of the project or workspace
- Non-routine activities such as maintenance, repair or cleaning
- Accident, incident or near-miss records
- Different potential workplaces, including at home or telework, other buildings, vehicles or clients' spaces
- The way work is organized, including work experience and systems used
- Foreseeable unusual conditions
- Potential intentional or unintentional changes to products, machines or equipment
- Risks to students, visitors or the public
- Types of people involved, especially those with less experience, reduced functional abilities or greater risk potential (e.g., expectant mothers)

The hazard wheel (below) is a simple yet effective way to improve hazard recognition. It focuses the assessor's attention on the various dynamic elements present in the workplace rather than randomly attempting to identify workplace hazards.

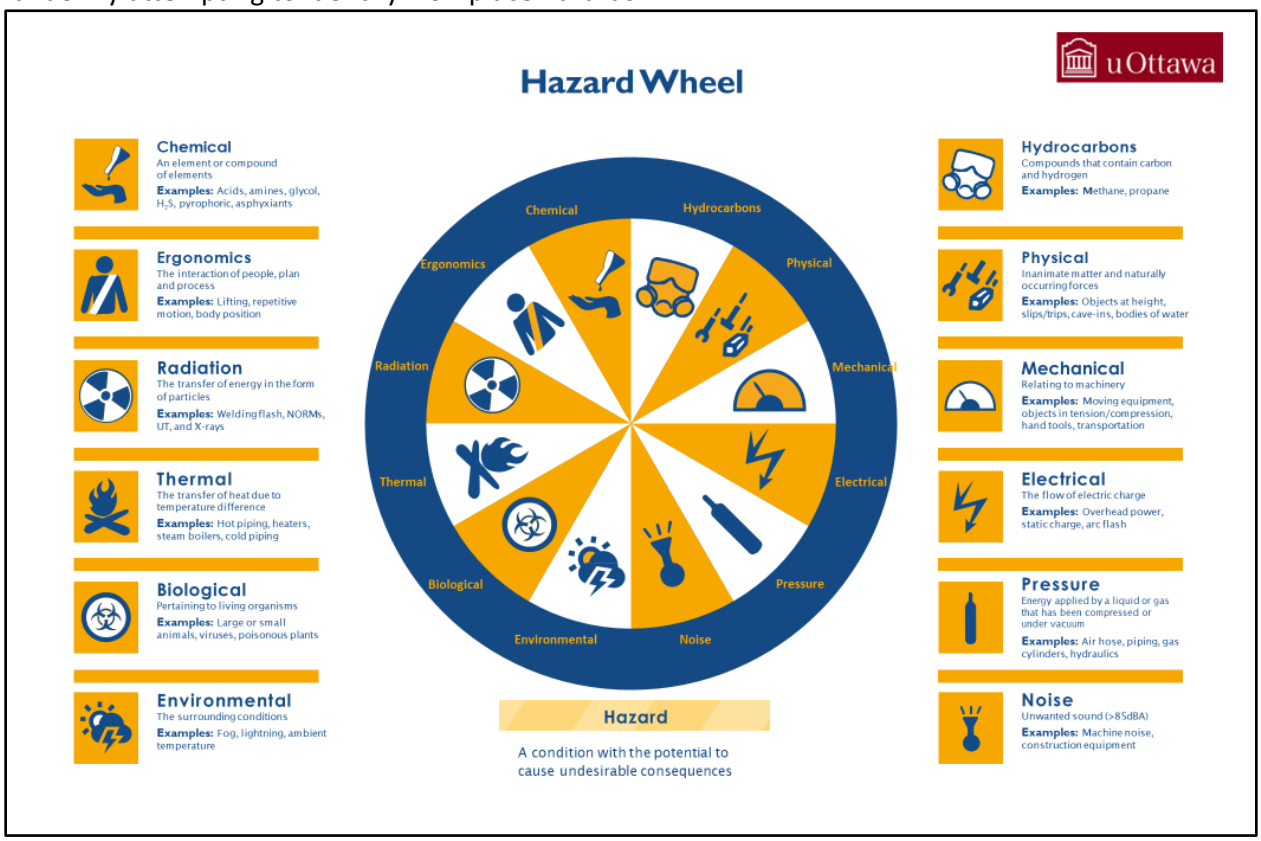

Figure 1 : Hazard wheel

When identifying hazards, the assessor (i.e., the supervisor) must account for how a particular hazard could harm a worker. Some factors that affect the degree of hazard include:

- Conditions for hazard exposure, including environment, location, time
- Amount (e.g., volume, concentration, intensity) of the potential hazard
- Route of entry into body (e.g., inhalation, absorption, ingestion, injection)
- Frequency and duration of exposure
- Manner of interaction

STEP 3: Risk assessment

Key activities

- Determine the risk level (i.e., likelihood and severity) of each hazard identified using the risk matrix below.

Establishing context

Risk assessment is the process of developing an understanding of the risk and, ultimately, the risk level as determined by:

- The likelihood of a risk
- The severity of a risk

Use the following scales to quantify frequency and severity, and thus reduce the subjective nature of the estimate.

Table 1: Hazard likelihood chart

Likelihood	Measure	Descriptor
Almost certain	5	Expected to occur in most circumstances; has occurred in the past (e.g., occurs more than once per day)
Very likely	4	Will probably occur in most circumstances; has occurred in the past (e.g., occurs every six months)
Somewhat likely	3	Could occur at some time; it has occurred at least once at other organizations (e.g., occurs every week)
Somewhat unlikely	2	Could occur at some time; it hasn't occurred here but has at other organizations (e.g., occurs every month)
Very unlikely	1	Could occur only in exceptional circumstances; it's possible but not known to have occurred in the past (e.g., occurs every 10 years)

Table 2: Hazard severity chart

Severity	Types of Consequence					
	Measure	Injury/Illness	Environment	Assets	Reputation	Documentation
Critical	5	Fatality; body part loss; life threatening situational exposure; serious permanent disability anticipated	Very serious permanent or long-term ecological impact; major public health hazard; clean-up impractical or multi-year remediation project	Capital equipment or facilities destroyed	Impact on staff, students and community is severe; significant impact on the institution's public reputation	Willful disregard, choice not to document; Willfully not monitored
Major	4	Serious injury or illness; more than 14 days' lost time;	Major environmental damage	Major equipment or facility	Significant impact on strategic or operational	Not documented; inconsistently implemented; not

Severity	Types of Consequence					
	Measure	Injury/Illness	Environment	Assets	Reputation	Documentation
		permanent disability not anticipated	and/or health hazard in immediate vicinity; remediation will affect materials	damage resulting in more than 48 hours' removal from service	objectives and sensitivity	monitored; repeated findings
Moderate	3	Significant injury or illness, less than 14 days lost time; permanent disability not anticipated	Moderate environmental damage, minimum health impact; recovery beyond local resources; remediation in one year is possible	Minor damage resulting in less than 48 hours removal from service	Medium impact on strategic and operational objectives; impact on individuals is noticeable	Not documented; inconsistently implemented; not monitored; repeated observation
Minor	2	Minor injury; no lost time	Minor environmental effects; no human impact; spill recovery possible but may require professional emergency response team	Minor damage deferred without repair; no removal from service required	Part of project threatened and managed internally; minimal impact on internal objectives; low sensitivity	Unclearly and/or incompletely documented; inconsistently implemented and/or monitored

Severity	Types of Consequence					
	Measure	Injury/Illness	Environment	Assets	Reputation	Documentation
Negligible	1	Slight or no injury; minor first aid; no impact on individuals	Minimal-to-no environmental effect; no human impact; spill recovery possible with current resources	Damage not requiring repair	Little consequence; routine operations; negligeable impact on persons	Clearly documented; fully implemented and consistently monitored

Risk level is assessed as **likelihood × severity** and is assigned a value based on where the likelihood and severity intersect on the risk matrix. This provides a value to guide decision making. The greater the risk level, the greater the attention required to address the issue.

Example 1: If a risk is a "Remote Possibility (1)" to occur and would result in "Moderate (3)" consequences, the risk level would be 3 (1 × 3).

Example 2: If a risk is "Likely (4)" to occur and would result in "Major (4)" consequences, the risk level would be 16 (4 × 4).

Table 3 - Risk matrix

		Likelihood				
		Remote Possibility (1)	Unlikely (2)	Moderately Likely (3)	Likely (4)	Almost Certain (5)
Severity	Negligible (1)	**1**	**2**	**3**	**4**	**5**
	Minor (2)	**2**	**4**	**6**	**8**	**10**
	Moderate (3)	**3**	**6**	**9**	**12**	**15**
	Major (4)	**4**	**8**	**12**	**16**	**20**
	Critical (5)	**5**	**10**	**15**	**20**	**25**

Legend	**Scale**	**Action**
Low	1 to 3	No further action required
Medium	4 to 7	Monitor; at the limit of acceptability
High	8 to 12	Tolerable for a short time while mitigation is being developed
Extreme	13 to 25	Discontinue until the risk can be lowered to an acceptable level

Determining the risk level allows you to prioritize identified risks and take action. This indicates key areas for risk controls to be implemented and the degree of urgency.

STEP 4: Risk evaluation and control

Key activities

- Evaluate and prioritize risk levels for hazards based on the risk matrix.
- Determine and document the hazard control type to be implemented in the risk assessment form for each identified hazard, based on feasibility and effectiveness.
- Determine and document the individual, team or methodology through which the control will be implemented.

Establishing context

Once risks have been analyzed and estimated, the supervisor can conduct a risk evaluation.

The risk evaluation formalizes decisions about whether a particular work activity should be conducted and the priority in which risks are addressed. Risk control fits into one of the categories detailed below in the hierarchy of controls. Document your decisions using the risk assessment form.

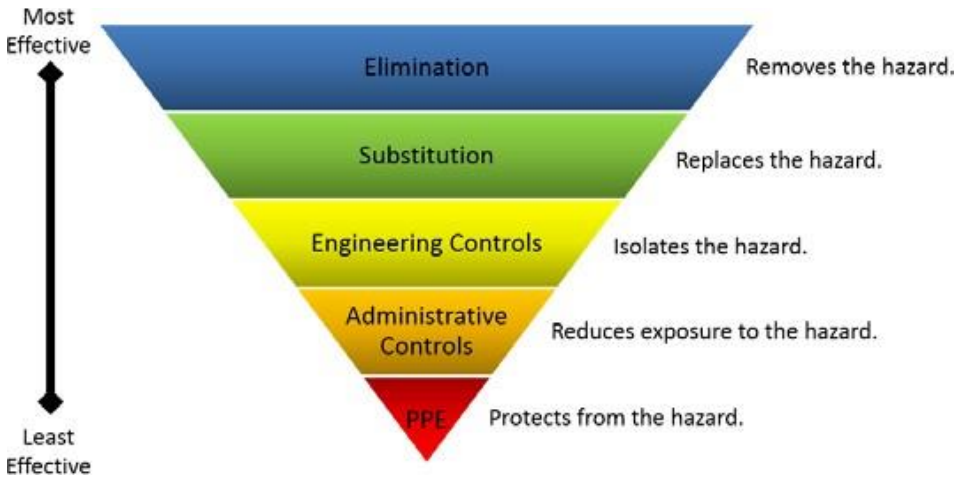

Figure 2 : Hierarchy of Control

Elimination is the most effective method of control. If the hazard (or risk) doesn't exist, it can't cause harm.

Substitution is the second most effective method, involving the replacement of a hazard with a less-hazardous alternative.

Engineering controls, or controls implemented at the source of the hazard, are the next most desirable method and are typically the next most effective. Examples of engineering controls include lockout devices, dual operation controls and fume hoods.

Administrative controls augment or modify the way the work is conducted to reduce the extent of the hazard or risk or exposure to it. Examples of administrative controls include reducing the time a worker is exposed to the hazard, changing work practices and training programs.

If **none** of the above control options can be implemented (or if **additional controls** beyond those above are **necessary**), **personal protective equipment (PPE)** is a reasonable control option. Remember that PPE doesn't remove or reduce the hazard — it only protects against the hazard for those individuals wearing properly selected and fitted PPE. For more on appropriate PPE, see the General OHS Program Manual.

When selecting controls, consider control failure or deterioration, along with the possibility that failure might introduce new hazards. Supervisors must regularly assess whether risk controls remain effective.

STEP 5: Escalation or receipt of assessment approval

Key activities

- Any assessment with at least one identified hazard should trigger the appropriate escalation or approval process.

Establishing context

Under Procedure 14-1, every person must ensure workplace health and safety. However, the head of the unit (e.g., a dean in a faculty, an associate vice-president) is ultimately responsible for managing the risks in work areas under their authority. Line managers are typically assigned for operational activities, including risk assessments.

Example: A dean is responsible for all faculty activities, including teaching, research, equipment operation, and item storage and transportation. Therefore, the dean is ultimately accountable for ensuring that all hazards are identified, and that all associated risks have been reasonably mitigated and/or controlled. Responsibility for these tasks can be assigned down the supervision chain to a vice dean, department chair, lab manager, etc., based on the unit's (in this case, faculty's) procedure.

The table below can help guide decision-making on escalation and approval based on the risk assessment findings.

Risk Level	Description	Required Action
Low	Less than 4	No approval required if risks are adequately controlled
Medium or high	Greater than or equal to 4	Obtain approval from principal investigator or supervisor
Extreme	Greater than or equal to 15	Consult with health and safety risk manager (or the Office of the Chief Risk Officer in cases where a risk manager isn't assigned) and obtain approval from the faculty or service head (the most senior person).

All risk assessments should be documented using the hazard identification and risk assessment form.