HAZARD ASSESSMENT PROCEDURE

PURPOSE

The purpose of this procedure is to eliminate or reduce the risk of injury, illness, equipment damage and environmental impact. It provides a framework for regular and consistent identification of hazards, assessment of risk, and implementation of mitigation measures for all offices, operations, worksites, and tasks.

DEFINITIONS

Assessment:
A process used to identify hazards, assess risk, and identify controls for tasks, processes, work methods, etc. that may cause harm to worker, environment, or equipment.

Competency:
A person who is qualified because of knowledge, training, and experience to organize work and its performance, is familiar with the Act and Regulations that apply to the work and has knowledge of any actual or potential dangers in the workplace.

Consequence:
The effect of the hazard, risk, and control (assigned a numerical value from 1 to 5).

Control:
Procedures, methods, tools, machines, or training adopted to minimize risks, injury, adverse health effects and damage to equipment or the environment.

Critical Task:
A task that has been identified as high risk, based on the risk assessment.

Daily Safety Meeting:
An active discussion between supervisors, employees, and visitors where job safety information including scope of work, hazards, the JHA and other safety information is communicated.

Hazard:
A source of potential damage, harm, or adverse health effects on something or someone.

Human Factors:
Human factors are how humans behave physically and psychologically in relation to environments, products, or services.

Job Hazard Analysis (JHA):
A documented hazard, risk, and control assessment completed at the time and place of specific task or job.

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Likelihood:
The chance of an incident happening. (assigned a numerical value from 1 to 5).

Residual Risk:
The remaining exposure after all efforts to identify, eliminate and control hazards are implemented to reduce risk to the lowest practical level.

Risk:
The numerical values of likelihood multiplied by the consequence using the risk matrix.

Workplace/Site Specific Safety Plan:
A formal safety plan specific to a workplace or construction site.

SCOPE

This procedure provides information and instruction regarding methods to identify hazards, assess risk, and implement the hierarchy of controls to ensure risk to employees, the environment, equipment, and property is eliminated or reduced to the lowest possible level.

Competent Persons

Hazard Assessments must be carried out by a competent person meeting the following requirements:

- Training in the organization of the work and its performance including hazard assessment, analysis, control and specific hazard assessment documents and safe work procedures contained in the OHSMS.
- Knowledge, training, and experience in the work methods, organization of the work and its performance.
- Familiar with the regulatory requirements, codes of practice and industry standards that apply to the work.
- Knowledge of actual and potential hazards and danger to health and safety in the workplace.

Areas Requiring Assessment

The process of hazard identification, assessment and control will be undertaken at all facilities, sites, and offices at the corporate, project, operation, and task levels. Assessments will consider all classes of hazards including biological, chemical, environmental, safety, psychosocial, physical and human factor (ergonomic) hazards.

Hazard assessments will be carried and documented in three main areas follows:

- Corporate Hazard Identification and Risk Assessment (HIRA)
- Pre-Construction Hazard Assessments and Site-Specific Safety Plan (construction projects)
- Daily risk assessments (JHA- construction projects)

Corporate Hazard Identification and Risk Assessment (HIRA)

This risk assessment is carried out for known hazards in all company operations, facilities, departments, processes, and sites, offices, laydown yards, driving, etc. and will:

- Include an overall risk assessment of operations.

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- Include both Pre and Post control risk assessment.
- Identify and document legislative requirements, guidelines, standards, safe work procedures.
- Be revised as required when new processes, equipment, or legislative changes are introduced.
- Identify tasks requiring Safe Work Procedures and Critical Task Procedures.

Pre-Construction Hazard Assessments
Will be carried out on project lasting more than 90 days. Known hazards based on the scope of work will be identified, assessed for risk and mitigation measures planned, developed and documented prior to mobilization to site. The HIRA will be a starting point when conducting a Pre-Construction Hazard assessment.

Pre-Construction Hazard Assessment will:
- Include review of legislative responsibilities, safe work policies, practices and procedures as required.
- Be carried out and documented by or under the direction of a competent person or supervisor.
- Be undertaken to identify hazards reasonably anticipated based on customer requirements, scope of work, site conditions, and geographic information (refer to the Pre-Construction Hazard Assessment Procedure).

Site Specific Safety Plans (SSSP)
Pre-Construction Hazard assessments will be used to develop a site-specific safety plan.

In addition the SSSP will:
- Include review of legislative responsibilities, safe work policies, practices and procedures as required.
- Be carried out and documented by or under the direction of a competent person or supervisor.
- Be completed prior to mobilizing on site.
- Will be undertaken based on information documented on the Pre-Construction Hazard Assessment.
- Include identification of hazards and mitigation procedures, emergency procedures, etc.
- Include assignment of responsibilities and contact information.

Note: Projects expected to last less than 90 days will not be subject to the SSSP process.

Job Hazard Analysis (JHA)
JHA(s) will be carried out regardless of the size or length of a project to ensure task-specific hazards are identified, assessed and mitigation measures applied as required.

Consideration will be given to weather, terrain, other contractors work and processes, training etc.
JHA(s) will be documented on the designated form and communicated to workers in a meeting prior to task assignment and work starting. All in attendance including workers, supervisors, contractors, or visitors affected by the work will be encouraged to take an active role in the assessment process and discussion.

Where the scope of work changes (weather, schedule, personnel, or task etc.) the risk assessment will be revisited and revised as required and will:

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- Be carried out daily to identify hazards, assess risk and mitigation measures.
- Include the scope of work, tasks and hazards presented by subcontractors.
- Include review of legislative responsibilities, safe work policies, practices and procedures as required.
- Be carried out and documented by or under the direction of a competent person or supervisors.
- Be communicated to employees, visitors, and subcontractors in vicinity of the task.
- Be kept in a database of common JHAs for reference where applicable.

Worker and third-party involvement

- Risk assessments for the HIRA will be carried out by the health and safety team and where required third party professionals such as engineers, maintenance personnel, manufacturers, and suppliers will be consulted. Where possible, workers will be involved in the assessment process through the JHSC, safety rep or directly reviewing the assessment and providing feedback.
- All workers are encouraged and expected to actively participate in safety meetings and hazard review.

Hazard Reporting Requirements

Reporting hazards is a legal requirement under the OHSA and a condition of employment.

All actual and potential hazards must:

- Be immediately reported to a supervisor or manager.
- Be reported during the assessment process if possible and when a worker becomes aware of the hazard after the assessment has been completed.
- Include hazardous acts (horseplay, carelessness, not using proper PPE etc.) that could lead to an incident, harm people, equipment, or property.
- Include broken, damaged, or improper tools, machines, and equipment.
- Include site conditions and hazards introduced by other contractors and subcontractors.

Controlling Risk

When considering controlling the risk associated with a job or task the hierarchy of controls must be used to ensure that the highest form of control and best protection possible is considered and implemented.

1. ***Elimination*** – The most effective measure. Choose a different process or modify an existing process.

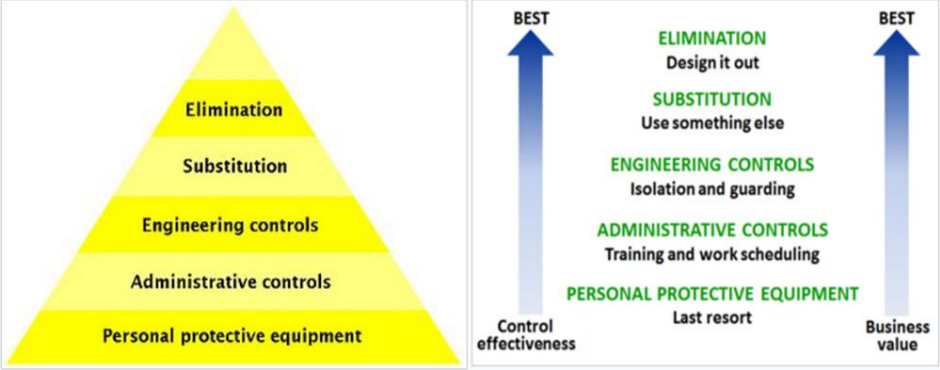
2. ***Substitution*** – Substituting for a less harmful substance or process.

3. ***Engineering Controls*** – Contain hazards by using a barrier between workers and the hazard (sound enclosures, machine guards, railings, ventilation, fencing, extraction systems etc.).

4. ***Administrative Controls*** – Revise work procedures. Administrative controls address how the work is structured, such as work procedure, pace, and breaks, training, rotation of workers to reduce exposure,

removing a worker to a remote location away from the hazard, lock out, work protection procedures, etc. Also included is housekeeping and permits.

5. **Personal Protective Equipment (PPE)** – Must only be used if other controls are not possible to implement. Although they can be effective, they are the least effective way to protect workers from hazards.



Two illustrations of the hierarchy of hazard control. On the left, illustrated as a triangle, on the right using arrows. In both images the most effective means is at the top, and the least effective at the bottom.

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Using the Risk Assessment Matrix:

RISK MATRIX : High - Medium - Low							
Consequence x Likelihood = Risk Rating			Likelihood				
			Certain	Very Likely	Possible	Not Likely	Almost impossible
			5	4	3	2	1
Consequence	Critical/Death	5	25	20	15	10	5
	Serious	4	20	16	12	8	4
	Medical aid resulting in modified work	3	15	12	9	6	3
	Minor injury - medical aid	2	10	8	6	4	2
	minor injury - first aid	1	5	4	3	2	1

High risk: likely resulting in serious injury, death, or major property/equipment damage. This level of risk is unacceptable.

Medium risk: may result in a medical aid injury or moderate property/equipment damage. Additional consideration must be

Low Risk: not likely to result in injury or peroperty/equipment damage and tasks can be carried out without additional risk

Hazard assessments will be carried out and documented using the corporate risk matrix above:

1. A job or task is assigned a numerical value consistent with the possible consequence of an occurrence.
2. A job or task is assigned a numerical value consistent with the likelihood or occurrence.
3. The consequence value is multiplied by the likelihood value to determine the overall task risk rating.

Tasks which have a pre-control risk of 10 or higher require a Safe Work Program and Safe Work Procedure.

Tasks with a residual risk of 11-25 are considered critical and require a Safe Work Program and Critical Task Procedure. These tasks are not to be undertaken until an additional hazard assessment has been completed and the task procedure reviewed by all workplace parties involved.

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PROCEDURE

Identify The Job, Process or Job Steps

- Identify the job, process or steps to be evaluated.
- Where necessary break the task into smaller steps or segments that allow the process to move forward.
- Document the job, process, or steps on the appropriate form (HIRA, Project Hazard Assessment or JHA).

Identifying Hazards

1. For site specific safety plans and daily JHA's review the job, procedure or task breaking it down into main steps (task that will move the process forward) and document them on the appropriate form.

2. For the HIRA steps may not be broken out, hazards will be listed under the task or job.

3. Identify all potential and actual hazards associated with the task and the working environment, including but not limited to:
    a. ***Physical*** – thermal conditions, noise, vibration, and poor lighting.
    b. ***Safety*** – kinetic energy (struck by), trip hazards, stored energy, gravity, electrical.
    c. ***Chemical*** – exposure to dust, mists, vapors, liquid chemicals and smoke.
    d. ***Biological*** – wildlife, bacteria, allergens, blood borne pathogens, vector borne diseases and viruses.
    e. ***Ergonomic*** – repetitive motion, excessive repetition, posture, and workspace design.
    f. ***Psychosocial*** – workplace violence, stress, pace of work, schedules and working alone.

Identifying, Assigning and Recording Controls

The hierarchy of controls must be implemented when considering the most effective controls for identified hazards.

<u>Controls can be implemented in three basic areas</u>:

1. ***At the Source of the Hazard (Elimination or Substitution)***: this is the best method of control as the hazard is eliminated completely.
2. ***Along the Path between the Workers and Hazard (Engineering Controls)***: this is the second-best choice of control because there is a barrier that prevents worker exposure to the hazard.
3. ***At the Worker (Administrative Controls, PPE)***: this is the least effective control. Although the worker is protected the control does not eliminate or reduce the hazard, requires proper fit (glasses and respirator), and can introduce psychological stressors.

Identifying Control Measures

Identify controls that will reduce either or both the likelihood occurrence or possible consequence to people, property or equipment if an incident were to happen.

- Identify all actions necessary to eliminate or control the risk through engineering controls, work practices, hygiene practices, facilities, and PPE (Consider both actual and potential exposure of workers).
- Consider all methods of work and procedures used in processing, use, handling or storage of substances, materials, equipment, etc.

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- Consider safe work practice, procedures, training, experience, competency, tools, and equipment.
- Ensure the risk level has been reduced to the lowest possible numerical value.

Documenting Control Measures

- Preventive measures must mitigate and or reduce the risk to an acceptable level.
- Assign controls to all identified hazards.
- Do not use general statements such as "be careful" or "use caution". Use specific statements describing what action is to be taken and how it is to be performed.
- Document preventive measures and controls on the appropriate form (HIRA, Project Hazard Assessment, or JHA).

Assessing Risk

Assessing the risk requires a competent person having knowledge of the regulations, codes of practice and industry standards that apply to the work, training to perform the assessment in compliance with OHSMS, legislative requirements and experience in the work being assessed.

For all types of risk assessments remember to:

- Account for worker training, knowledge, and experience (competency).
- Document on the appropriate form or template.
- Consider all potential and actual hazards in normal operational situations as well as non-standard events such as shutdowns, power outages, emergencies, etc.
- Review available health and safety information about the hazard such as SDS(s), manufacturer's literature, information from other organizations, testing results etc.
- Consider who may be exposed, how they may be exposed, how much they will be exposed to and when they will be exposed.
- Consider the work area lay out, ergonomics, equipment, machinery, processes, and other contractors.

Assigning Numerical Values to Determine Risk

1. The likelihood of an incident occurring ranges from almost Impossible to certain and will be assigned a numerical value from 1-5 on the risk matrix chart.
2. The consequence of an incident ranges from Minor Injury/First Aid to Critical Injury or Death and will be assigned a numerical value from 1-5 on the risk matrix chart.
3. Risk will be determined by multiplying the numerical value assigned to likelihood by the numerical value assigned to Consequence. (Likelihood X Consequence = Risk).

Determining Risk and Residual Risk

- Identify a job, operation or task and list it on the on the appropriate form.
- List the known and potential hazards associated with the job, operation, or task.
  Note: Give no regard to the possible controls when assigning pre-control values on the HIRA.
- Assign a numerical value to the likelihood of an incident happening.
- Assign a numerical value to the consequence of an incident occurring.

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- Use the risk matrix to multiply the numerical value assigned to likelihood with the numerical value assigned to consequence.
- The remaining value represents residual risk or risk remaining after controls are applied.
- Document the total value in the corresponding column.

The risk rating numerical value will correspond with a colour on the risk matrix indicating:

- Green = Low Risk
- Yellow = Medium Risk
- Red = High Risk

The risk rating and numerical values:
Low/Acceptable Risk – The total numerical value is calculated to be **between 1 and 5**, the controls are considered adequate to mitigate the risk and no other action is required.

Medium Risk – The total numerical value is calculated to be **between 6 and 10**. Consideration shall be given to additional measures reducing risk. Work can proceed; however, controls must be maintained to ensure that the risk does not increase.

High Risk – The total numerical value is calculated to be **between 11 and 25**, the risk is unacceptable. Work must not proceed until risk is reduced to a lower level. Controls including training, tools, equipment, safe work practices and procedures are required to reduce risk. Tasks that have a high-risk rating are not to be carried out without approval from J-AAR management.