JOB HAZARD ANALYSIS PROCEDURE

PURPOSE

The purpose of this procedure is to reduce or eliminate incidents by providing information and guidance to ensure consistent and effective Job Hazard Analyses (JHA's) are conducted as a part of job planning.

The JHA process will ensure that hazards are identified, and adequate mitigation measures implemented to eliminate or reduce the risk to people, property, equipment, and the environment. In addition, a JHA will help:

- Prompt recognition of hazards and methods of control or mitigation.
- Promote acceptance of consistent work procedures.
- Reduce workers reliance on memory and increase consistency.
- Identify previously undetected hazards.
- Increase job knowledge.
- Raise health and safety awareness.
- Promote improved communication between workers and supervisors.
- Serve as a teaching aid for initial job training and as a briefing guide for infrequent jobs.
- Assist in completing observations during site audits or accident investigations.

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.

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.

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

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

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

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SCOPE

Most construction projects require several JHAs. Wherever possible, input will be solicited from workers, supervisors, managers, JHSC/worker representative, and others who may be affected.

JHAs are living documents that may change as the job scope or project evolves and when new information becomes available. They must be reviewed and revised as required and cover all main steps in a specific task to be effective.

Competent Persons

JHA(s) must be carried out by a competent person meeting the following requirements:

- Training in the organization of the work and its performance including specific hazard assessment documents, and safe work practices and 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.

It is J-AAR's policy that the JHA is reviewed for each task carried out by a field worker before work commences every day.

PURPOSE

1. JOB OR TASK SELECTION

The terms "*job*" and "*task*" are used interchangeably to mean a specific work assignment, such as digging a trench, placing aggregates, benching and parging concrete, refueling equipment etc.

JHAs are not suitable for jobs defined too broadly, for example, "installing utilities", or too narrowly, for example, "lifting a pipe".

When selecting a job to be analyzed, the following points will be considered:

- Jobs where incidents occur frequently or occur infrequently but result in disabling injuries.
- Potential for severe injuries or illnesses.
- The consequences of an incident, hazardous condition, or exposure to harmful substance.
- Newly established jobs.
- Lack of worker experience with jobs or tasks (hazards may not be evident or anticipated).
- Modified jobs (new hazards may be associated with changes in job procedures).
- Infrequently performed jobs (workers may be at greater risk when undertaking non-routine jobs, and a JHA provides a means of reviewing hazards).

- Separate JHA(s) are required when workers perform similar tasks in different locations.
- Training and competency.

2. BREAKING THE JOB DOWN

After a job has been chosen for analysis, the next stage is to break down into steps:

- A job step is defined as a segment of the operation necessary to advance the work.
- If steps are too detailed, the JHA will be burdensome and difficult to follow.
- If not detailed enough, hazards may be missed.
- Be as specific as you can.
- Keep the steps in their correct sequence. Any step, which is out of order, may miss serious potential hazards or introduce hazards, which do not exist if documented in the sequentially.

3. IDENTIFYING POTENTIAL HAZARDS

Think about what could go wrong from a health and safety point of view and how people, equipment, materials, subcontractors, and the surrounding environment could pose a hazard.

To help identify potential hazards consider questions such as:

- Is there other work going on near the work area?
- Are there Legislative and Regulatory requirements?
- Do manufacturer's equipment instructions apply?
- Is there live apparatus in the area or do *Limits of Approach* apply?
- Can any body part get caught in or between objects?
- Do tools, machines, or equipment present any hazards?
- Can the worker slip, trip, or fall?
- Can the worker suffer strain from lifting, pushing, or pulling?
- Is the worker exposed to extreme heat or cold?
- Is excessive noise or vibration a problem?
- Is there a danger from falling objects?
- Is lighting a problem?
- Can weather conditions affect safety?
- Can contact be made with hot, toxic, or caustic substances?
- Is there dust, fumes, mist, or vapors in the air?
- Is there any stored energy (pneumatic, hydraulic, gravity, electric, etc.)?

List all hazards associated in each step of a job task (both potential and actual hazards must be identified).

Document the hazards on the JHA corresponding with the task or job step. At this stage of the JHA process simply listing the hazards is the goal. No attempt is made to resolve them.

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Note: It may be possible for more than one hazard to be associated with any step.

4. DETERMINING PREVENTATIVE CONTROL MEASURES:

The final step in gathering information for a JHA is to determine ways to eliminate or control the hazards identified.

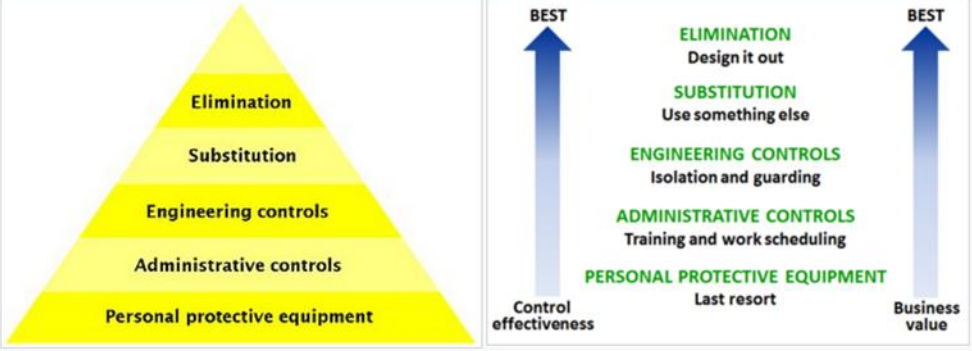
Using the hierarchy of controls will ensure the highest level of protection possible is realized.

When Considering Implementation of Controls:

- Identify all actions necessary to eliminate or control the risk.
- Consider processing, use, handling or storage of substance, materials, equipment, etc.
- Consider both the actual and the potential exposure to the worker.

Controls can be implemented in three basic areas:

1. At the source of the hazard (Elimination or Substitution).
2. Along the path between the workers and hazard.
3. At the worker.



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.

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

Substitution – Substituting for a less harmful chemical or process.

Engineering Controls – Contain the hazard. If the hazard cannot be eliminated, exposure might be prevented by using a barrier between workers and the hazard (sound enclosures, machine guards, ventilation, fencing, railings, extraction systems etc.).

Administrative Controls – Revise work procedures. Administrative controls address how the work is structured, such as work procedure, pace, and breaks. Consideration might be given to modifying steps which are hazardous, changing the sequence of steps, adding additional steps, training, rotation of workers to reduce exposure, removing a worker to a remote location away from the hazard, lock out, work protection procedures. Also included is housekeeping and permits.

Personal Protective Equipment (PPE) – Must only be used if no other solutions are possible. They are the least effective way to protect workers from hazards. It they fail, workers are still exposed to the hazard.

Documenting Preventative Control Measures

In listing the preventive measures, do not use general statements such as "be careful" or "use caution". Specific statements, which describe both what action is to be taken and how it is to be performed, are preferable. Preventive measures must mitigate the risk.

5. COMMUNICATION

Supervisors or delegates must communicate results of the JHA to all workers assigned tasks, working in proximity, or exposed to workplace hazards.

The daily safety meetings will include two-way communication regarding content, assignments, and requirements of the JHA(s) including the job or task being carried out, hazards associated with the tasks and control measures to eliminate or reduce risk.

Safe work practices and procedures must be reviewed as required to ensure worker familiarity.

Signing off indicating review and understanding of the JHA is mandatory for all workplace parties involved.

J-AAR's health and safety team creates JHA templates for tasks and provides them to field supervisors through the HCSS Safety App. All J-AAR supervisors are provided with an iPad with a data connection by the company at the time of their hire. These templates are created by assessing the corporate HIRA, reviewing company policies and procedures, equipment and devices available to the company, and consulting with supervisors and workers who are carrying out the work. These templates are intended to be a starting point for daily JHA's. They can be edited and/or updated as required through the app to account for changes in condition and unforeseen hazards. Supervisors also can create a custom JHA from scratch on the app.

6. FOLLOW UP

Supervisors must follow up in the field to ensure requirements are understood, implemented and effective.

Any major changes must be reported to the health and safety team for evaluation and possible addition to the HIRA.

Reassessment Review and Approval

- JHA(s) must be documented using the appropriate forms approved by management.
- If the scope of work changes, new operations are undertaken, new tools, materials, equipment, or procedures are added or when legislative changes impact our work, the JHA must be reviewed and revised as required.
- Changes must be communicated to workers and all parties affected by the work.
- After any major incident, the JHA, if applicable will be reviewed to ensure practices, procedures, tools, and equipment are appropriate for the protection of workers and that risks have been evaluated accurately.
- Senior management will review and approve the JHA process as required. Reviews will include new regulatory requirements, tools, equipment, operations, industry practices, standards, and guidelines.

7. HIRA Documentation

Tasks and Risks are documented and listed. Annually a review is done by the Health & Safety Team to ensure that we have an accurate depiction of the jobsite risks our teams come in contact with on a daily basis, pending on the nature of the work to be completed.

The list items are reviewed and assessed based on the likelihood of incident, and the resulting severity of incident. This scale is best practice and used to ensure we adequately and realistically assess risks. On a scale from 1-5, a score is assigned for severity and likelihood, then those numbers are multiplied to reach our PRE-CONTROL RISK Number. While a shark attack has a high level of severity, it is a very low likelihood for our teams working in Southwestern Ontario. The severity would be a level of 5, the likelihood would be rated at a 1. Resulting in a PRE-CONTROL RISK Number of 5 (5x1=5)

If the PRE-CONTROL RISK Number is lower than 10, then the Risk is identified, and the HIRA Page is written highlighting exposures, controls, and references (both regulatory and corporately).

If the PRE-CONTROL RISK Number is higher than 10, a Program needs to be developed to highlight a proper program or procedure for handling or addressing the risks identified in the HIRA. The HIRA Page is written highlighting exposures, controls and references (both regulatory and corporately). The program is developed.

Through the development of the program the controls identified will be sufficient to diminish the exposure to harm. New likelihood and severity numbers are assigned based on the Program being followed and all controls being used. If we were to continue with our shark attack example, then we

could put in place a control to diminish the severity of injury in dealing with sharks by replacing adult sharks with baby sharks. The severity would diminish drastically. From a severity of 5, to a severity of 1. Following this hazard reassessment, a POST-CONTROL RISK is assigned. Once again multiplying the likelihood by the severity.

If the POST CONTROL RISK Number is from 5 to 10, then the program requires a supplemental Procedure to outline the handling of risks and how to address and place controls.

If the POST CONTROL RISK Number is 11 or greater, then the program is defined as a Critical Task, and a supplemental Critical Task Procedure to outline the handling of risks and how to address and place controls.

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. Substantial improvements are required to reduce risk.

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

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