Element 2

Hazard Identification, Elimination and Control

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Hazard Identification, Assessment and Control Program

Purpose

This directive and procedures outline the responsibilities and activities required to ensure the risk management process is carried out consistently and effectively in a formal manner and appropriate records are maintained, updated and affected workers informed when changes occur.

Implementation of the directive and procedures includes identifying hazards and documenting the process; hazards are risk assessed, controlled, monitored and reviewed and updated when changes happen.

Legislation

The Alberta Occupational Health and Safety Code, Part 2 Hazard Assessment, Elimination, and Control legislation outlines that an employer must assess a work site and identify existing and potential hazards before work begins at the work site or prior to the construction of a new work site.

- *Prepare a report including identification of the hazards and control methods or eliminate the hazard itself.*

- *Date the hazard assessment report.*

- *Hazard assessments are repeated and reviewed at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions;*

  - *At reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions,*
  - *When a new work process is introduced,*
  - *When a temporary work activity is introduced,*
  - *When a work process or operation changes, or*
  - *Before the construction of significant additions to a work site.*

- *Affected workers are to be involved in the hazard assessment and the control or elimination of hazards identified.*

- *Affected workers are to be informed of the hazards at a work site and the methods used to control or eliminate the hazards.*

Emergency Control of Hazards

The Alberta Occupational Health and Safety Code, Part 2 Hazard Assessment, Elimination, and Control Section 10, If emergency action is required to control or eliminate a hazard that is dangerous to the safety or health of workers,

- *Only those workers competent in correcting the condition, and the minimum number necessary to correct the condition, may be exposed to the hazard, and*

- *Every reasonable effort must be made to control the hazard while the condition is being corrected.*

Hazard Identification, Assessment & Control Directive Statement

The identification of hazards, assessing risks to the hazards, identification, and implementation of control measures, and informing affected workers is the foundation of the Hazard Assessment Directive and procedures.

Risk assessment is carried out on an ongoing basis, and to be effective; affected workers, supervisors, managers are to co-operate in the risk assessment process.

Managers, Supervisors, and Health and Safety Representatives are responsible for ensuring the risk assessment process is conducted, regularly reviewed, remedial controls identified and implemented. Ensure workers are trained in the hazard assessment procedures.

Workers are expected to report unsafe or unhealthy hazards in their work environments. If at any time a worker considers that there is a serious hazard in their work environment or the nature of the hazard is dangerous, the worker has the right to refuse dangerous work.

Managers and supervisors are to investigate all work refusals, and workers are to participate and assist managers and supervisors in identifying control measures to either eliminate or control the worksite hazards to as low as reasonably possible.

Managers, supervisors, and affected employees are responsible for developing and preparing a hazard assessment report for their work sites and on all public property that is under the care of the Town of Sexsmith.

Formal hazard assessments will be reviewed annually with all affected workers, at a minimum, as well as;

- When a new work process is introduced or temporarily introduced.
- When a work process or operation changes or temporarily changes.
- Before the construction of significant additions to a work site.
- If new hazards are identified and introduced into work activities through;
  - Site-specific (Field Level) Hazard Assessment, site-specific hazard assessments
  - Work Inspections
  - Investigation Findings

Complete the hazard identification, assessment, and control processes at the start of a new work process or when a job task changes. New hazards can be introduced or identified from work site inspections and post-incident investigations. Including all areas, helps address all hazards and appropriate control measures identified and implemented.

The formal and site specific, (field level), hazard assessment processes support the injury and loss prevention strategies when; introduction of temporary work and when job activities are conducted at temporary worksites. Formal hazard assessments become useful reference tools for training, modified duties and hiring practices.

The information in this manual does not take precedence over any applicable provincial or federal occupational safety laws with which all employees should be familiar.

Responsibilities

Managers Responsibilities

Managers are responsible for ensuring that the Hazard Identification, Assessment, and Control program is carried out in their area of responsibility, as well as participating in the identification of hazards where applicable.

Managers and supervisors are responsible for ensuring informing all affected workers on the hazards and the methods used to control or eliminate the hazards, to reduce injuries and losses.

Managers and supervisors are responsible for ensuring hazard assessments are continually reviewed and updated, and the reports are signed off by the manager, supervisor and affected workers.

Managers are accountable for ensuring the hazard identification, risk assessment, and implementing control processes for their work areas.

Managers are to complete formal training in Formal Hazard Assessment process and complete any required site-specific hazard assessment training, e.g., WHMIS, TDG, Ammonia, H2S.

Supervisors Responsibilities

Supervisors are responsible for the application and on-going operation of the Hazard Identification, Assessment, and Control Program in their area of responsibility.

Supervisors shall participate in the creation and review of all hazard assessments and ensure all corrective actions have been followed up.

Supervisors are to ensure hazard identification, risk assessment, and control measures are the main focal point of all safety-related meetings.

Supervisors are to complete training in hazard assessment processes and complete any required site-specific hazard identification, risk assessment, and control processes; e.g., WHMIS, TDG.

Workers Responsibilities

Workers shall participate in identifying, assessing, and correcting hazards.

Workers must use the control measure processes identified in hazard assessment processes.

Workers must report on unsafe or unhealthy or dangerous in the workplace. Report hazardous workplace conditions to managers, supervisors, health and safety committee member or representatives.

Workers are to be trained and coached in their work-related hazardous materials, work activities, and handling of hazardous products; e.g., WHMIS, TDG, Orientations.

Hazard Assessment, Elimination and Control Process

An employer must assess a work site and identify existing and potential hazards before work begins at the work site or when the introduction of temporary work activities into the work environment or when work activities are completed at temporary worksites.

Health and safety hazards and occupational illness arising from the work environment, which may cause impaired health and wellbeing, sickness or significant discomfort and inefficiencies, must be identified, monitored, and controlled.

Management of the Town of Sexsmith will be responsible for implementing any controls and will monitor the effectiveness of all new controls.

Hazard Assessment and Control Process Steps;

- Identifying and listing all positions within the company.
- Establishing an inventory of tasks involved in each position.
- Identifying the hazards or potential hazards for each task.
- Assessing the level of risk or loss potential of the identified hazards.
- Implementing control strategies to reduce or eliminate the risk or loss of potential.
- Review completed formal and site-specific hazard assessment forms and sign-off and date assessment forms.
- Monitoring and follow-up to ensure the established control strategies are practiced and effective.

Hazard Reporting Procedures

Workers are required to report all hazards they encounter in the workplace. Reporting hazards in the workplace help managers and supervisors eliminate the potential for a hazard to develop into a near miss, injury or collision situation.

- Identify the hazard.
- Correct the hazard, if it is possible and safe to do so.
- If the hazard cannot be corrected, tag out or lock out the equipment, tool, PPE and take the defective equipment, tools or PPE out of service, if applicable.
- Notify the supervisor or manager immediately.
- Complete a hazard report, (near miss report, site-specific hazard assessment form) and forward the report to the supervisor or manager for investigation and correction of the hazard or hazardous condition.
- The person reporting the hazard, the immediate Supervisor and Management must confirm the hazard exists and has a potential for creating a more hazardous work activity or condition.

Hazards should be the main focal point of all safety-related meetings.

Hazard Identification Procedures

Managers, supervisors, and workers are responsible for identifying and reporting occupational health and safety hazards in their work area. Competent workers or competent supervisors are responsible for evaluating workplace hazards.

There are four main categories of hazards in the workplace.

Physical Hazards

This category includes hazards causing harm or adverse effects on the human body including radiation, noise, illumination, vibration, and extremes of temperature or humidity.

Biological Hazards

Mold, viruses, bacteria, fungus, parasites, insects, plants, and animals that may cause adverse effects to the human body. These sources can cause a variety of health effects ranging from skin irritation and allergies to infections (e.g., tuberculosis, AIDS), Cancer, SARS, Hantavirus and a range of issues by infectious disease as well as disorders such as Asthma, Dermatitis, Latex Allergy, and more.

Chemical Hazards

Chemical hazards and harmful substances may be in the form of airborne chemicals and hazardous substances and fluid chemicals and hazardous substances. They can be naturally occurring or brought in for the work at hand.

The water treatment plant, sewage treatment plant, swimming pool, and other municipal worksites use hazardous chemicals.

Ergonomic Hazards

Physical disorders and stress that cause harm to the human body, resulting from poor posture, improper manual handling of material or equipment, inadequate seating support, fatigue, monotony, and irregular work/rest cycles are considered ergonomic hazards.

Risk Assessment Procedures

Identify hazards in all work activities, then assess the risks associated with that hazard. Risk is made up of two factors; the frequency at which an event may occur and the severity of the consequences of that event. The risk level indicates which task(s) pose either a low, moderate, or high risk.

Severity:

How dangerous could the consequences be?

3 – It could kill you or cause permanent disability, today or over time.
2 – It could send you to the hospital.
1 – It could make you uncomfortable.

Likelihood:

How likely is it going to happen? Likelihood also takes into consideration the probability of the hazard from happening in the first place.

3 – It is highly likely.
2 – It might happen.
1 – It is unlikely.

Overall Risk Ranking System

When determining overall risk, both severity and frequency are multiplied together to give an overall risk ranking.

An incident that is likely to occur often without precautions should be considered high risk, even if the severity of the consequences is moderate or low.

An incident that is likely to result in serious injury should be rated as high risk, even if the frequency is moderate or low.

Calculate the risk of hazards to prioritize preventive actions.

Severity x Likelihood = Risk

Risk Ranking	Control Measures
0-3 – Low risk	Identifying engineering or elimination or substitution can bring a high to moderate risk to a low risk and implementing administration and PPE lowers risk levels.
4-6 – Moderate Risk	Implementing a combination of control measures help keep risk levels at a tolerable level, such as engineering, administrative and PPE controls.
7-9 – High Risk	Elimination or substitution is the first level of control implementation. Additional engineering or substitution controls are often required to lower the risk level.

Accident Frequency and Severity

Reviewing past incidents, near misses, loss time, no loss time, and serious near-miss incidents help provide a level of overall risk and when determining the level of likelihood ranking.

Include in the risk evaluation process a review of tasks where incidents occur frequently, or where incidents occur infrequently but result in serious injury.

Potential for Severe Injury
Tasks where the consequences of an incident can be severe.

Newly Established Jobs
Due to a lack of experience in these jobs, hazards may not be readily apparent.

Modified Jobs
New hazards may come with changes in job procedures.

Infrequently Performed Jobs
Personnel may be at higher risk when doing non-routine jobs.

Assess for potential hazard risk in job factors. Reviewing job factor risk factors help determine the priority of higher risk tasks. Document all hazard evaluation results and forwarded to management for final review and sign-off.

Hazard Control Measures Procedures

In the event, a hazard becomes prevalent at a work site and where the following control measures do not specifically address the hazard, manager or competent and qualified person at the site will establish a method of controlling the risks. One or more of the following techniques will be used to eliminate or control the identified hazards.

The hierarchy of controls will be used to determine the most effective method to either eliminate or control the hazards.

Hierarchy of Controls

If an existing or potential hazard to workers is identified during a hazard assessment process, an employer must take measures in accordance with this section to eliminate the hazards, or if elimination is not reasonably practicable, control the hazard.

If reasonably practicable, an employer must eliminate or control a hazard using engineering controls.

If a hazard cannot be eliminated or controlled under AB OHS Code Section 9(2), the employer must use administrative controls that control the hazard to a level as low as reasonably achievable.

If the hazard cannot be eliminated or controlled under AB OHS Code Section 9(2) or 9(3), the employer must ensure that the appropriate personal protective equipment is used by workers affected by the hazard.

If the hazard cannot be eliminated or controlled under AB OHS Code Section 9(2), 9(3) or 9(4), the employer may use a combination of engineering controls, administrative controls or personal protective equipment if there is a greater level of worker safety because a combination is used.

Elimination & Substitution Controls

Wherever possible, eliminate or substitute out workplace hazards. Elimination presents the best method for controlling a hazard; however, eliminating all hazards may not be possible in all situations. The next best option for control is substitution.

Substitution is using less hazardous materials, changing the equipment used, or changing the process itself.

Examples are;

- Remove a fire hazard by using non-combustible materials instead of combustible
- Eliminate a manual-handling task by using a mechanical lifting device
- Eliminate protruding objects
- Repair a leak and eliminate toxic fumes
- Remove and dispose of defective ladders

Purchasing Controls

A copy of the product WHMIS Safety Data Sheet must be available before purchasing, receiving, handling, storing, or using a potentially dangerous product or material.

Substituting chemical products with less hazardous products is a priority.

Engineering Controls

Deals with the elimination or isolation of the hazard from the employee, and physically limit the employee's exposure to the hazard. Ideally, implement engineering controls at the design or conceptual stage of a project. Engineering controls are the preferred method of controlling hazards.

Examples:
- Guarding on hand/small tools.
- Backup alarms on all units.
- Engineered air in the shop.

Administrative Controls

This hazard control measure generally deals with providing written direction for Personnel and includes broad topics such as policies, procedures, and training. Managers and supervisors will establish and implement administrative controls.

Examples:

- Safe work procedures for the following: Cell phone, Cleaning Solvents, Crane Lifts, Crushing, Driving, Fall Protection, Genie Boom, Hand Tools, Ladders, Lawn mower and Weed Eater, Manual Lifting, Motor Vehicle, Office, Refueling, Rigging, Towing.
- Training: First Aid, TDG, WHMIS 2015, Fall Arrest (if required), Genie Boom (if needed).
- Company Specific Orientation.

Personal Protection Equipment

PPE controls are the least effective of all the control processes. PPE control measure is the "last resort"; where it is not practical or possible to eliminate the hazards, and as a result, personnel is required to wear equipment or use devices to protect themselves.

PPE used:

- Coveralls
- Gloves
- Hard Hat
- Proper CSA Footwear
- Safety Glasses

Hazard Assessment Reports - Date, Review and Signoff Procedures

Reviews and signoffs are the final steps when hazard assessments are approved. The final review and sign-off build accountability from managers, supervisors, and workers.

Informing workers is the responsibility of managers and supervisors. The final review process identifies any gaps or missing information during the identification process.

Formal hazard assessments are reviewed and signed off when;
- When new workers are hired, as part of the orientation process.
- Orient workers to the updated formal and site-specific hazard assessments and control processes identified.

Site-specific (field level) hazard assessments are to be reviewed with affected workers, signed off by workers and reviewed and initialed by managers or supervisors.

Conducting Site-Specific Level Hazard Assessments (Field Level Hazard Assessments)

Complete the site-Specific, (field level), hazard assessments before commencing with the daily work in the field, at remote work sites or the introduction of temporary work.

Site-specific level hazard assessments are not typically completed for Office Administration work unless the employee will be conducting work or inspecting a work site that requires a field level hazard assessment, then the worker is required to complete a site-specific (field level) hazard assessment.

For example:

If temporary work is introduced at the office location, such as construction or renovations are being completed, then a site-specific level hazard assessment process is required.

If the Administration Office personnel oversee organizing a parade, then the administrative personnel are responsible to ensure all workers and volunteers participate, document and sign off on the site-specific hazard assessment form.

Completing Site-Specific (Field Level) Hazard Assessments

Site-specific level hazard assessments, (field level hazard assessments), are to be completed using the appropriate site-specific form for the work activities.

- Review the scope of work before commencing with the job/task. The task will require a specific set of actions to complete. A critical task is one that has the potential to produce significant injury or loss.

- Break the job into a sequence of defined steps.
    - A job step is a segment of the operation required to advance the work.
    - Care must be taken not to make the steps too general, thereby missing specific steps and their associated hazards. On the other hand, if they are too detailed, then the analysis can become unmanageable.
    - It is essential to keep the steps in their correct order because timing can affect or create a hazard. List these steps in the "Job Steps" column on the Field Level Hazard Assessment form.

- Identify the actual and potential hazards associated with each step. Ask the question, "what can go wrong." Check all the identified hazards in the "Hazards" column of the Field Level Hazard Analysis form.

- Using the Risk Matrix, rank the hazards on their relative risk for the severity of the impact and the probability of occurring.

- Develop appropriate controls or preventative measures that could be used to eliminate or reduce the potential danger that the hazards could present. The appropriate controls are identified using the Strategies for Controlling a Hazard. Document the controls used to eliminate, substitute, or control the risk hazard.

- Re-evaluate the risk ranking of the identified hazards and assign responsibility for the implementation of the controls.

- Communication the results of the site-specific hazard assessments to affected workers, once completing the analysis and all reasonable steps have been taken to control the hazards.

The controls identified for the Site-specific (field level) hazard assessments are combined with the controls from the Formal Hazard Assessment to form a complete package. The package will summarize the hazards with their controls and who is responsible for their implementation.

Hazard Assessment Training

Managers and supervisors are to provide hazard specific training for workers, as identified from the formal and site-specific hazard assessment processes. Training supplements procedural, PPE, and engineering controls as part of the hazard control measures program.

Examples of hazard identification, assessment, and control training;

- WHMIS 2015,
- Transportation of Dangerous Goods,
- Site-specific orientation

- Specific Chemical Handling Training, Ammonia, H2S Alive

Workers, supervisors, and managers must complete the required hazard assessment level of training, before being exposed to work hazards - chemical, biological, physical and ergonomic, psychological.

Training Workers - Conducting A Hazard Assessment

- Assemble all personnel involved.
- Make sure to include the date on the hazard report
- Prior to starting, discuss possible hazards.
- Tour the entire operation.
- Look for possible hazards originating with environmental, material, equipment and people.
- Keep asking, "What if?"
- Take immediate action to control any or all hazards representing "imminent danger" to personnel.
- Information on the assessment form must pertain to all areas of the operation; use a separate form for each task.
- Review the findings.
- Prioritize the items on a "worst first" basis.
- Develop a plan to control the identified hazards.

Complete a walk around the worksite. During the observation tour, the following questions can help identify potential hazards:

- Could any part of the body get caught in or between objects?
- Do tools, machines, or equipment present any hazards?
- Can a person be harmed if there is contact with the machine?
- Can a person slip, trip, or fall?
- Can a person suffer strain from lifting, pushing, or pulling?
- Can a person be exposed to extreme heat or cold?
- Is there a danger from falling objects?
- Is lighting a problem?
- Can weather conditions affect safety?
- Is harmful radiation a possibility?
- Can contact be made with hot, toxic, or corrosive substances?
- Are there fumes, vapours, dust, or mists in the air?

Repeat the hazard assessment processes at appropriate intervals and as hazards change, to prevent unsafe and unhealthy working conditions. Complete hazard assessments when a new work process is introduced or changed.

Training Workers - Control Mechanisms

Controls at the source

- Elimination – removing the hazard from the workplace all together. An example of this would be adding equipment for material handling to eliminate manual lifting.

- Substitution – if you can't eliminate the hazard perhaps you can substitute a product or process that reduces the risk at the source. An example would be substituting methyl hydrate with diesel fuel conditioner to guard against diesel fuel freeze up in winter operations.

- Redesign – refers to changing the existing equipment to eliminate a hazard. An example of this would be changing flooring to non-slip floors in areas where there was a slipping hazard.

- Isolation – refers to enclosing hazards from workers, such as noisy processes or those creating noxious fumes; this allows the work to take place without risk to Workers.

- Automation – highly dangerous or repetitive work lends itself to being automated using robotics. However, as in many hazard control situations, we need to ensure we are not introducing another hazard to the workplace. Working with robots requires sophisticated safe work procedures.

Controls along the path

- Barriers – the use of physical barriers or guards can keep Workers away from moving belts and equipment. The more distance between a hazard and a Worker, the safer a workplace. Use guards or covers to keep hands out of moving parts. Lockouts can control the accidental startup of equipment or exposure to high temperatures or pressures among other things.

- Absorption – Sound can be absorbed and therefore reduced by using special panels. Local area exhaust systems linked directly to a hazard generating process can efficiently dust and fumes.

- Dilution – Reducing harmful substances to safe levels through the addition of high quantities of harmless material.

Controls at the worker level

- Administrative controls – these include the development of new or improved policies and procedures for carrying out work, along with their promotion and enforcement. The quality of supervision and job-related training could both contribute to the control of hazards.

- Emergency Planning – while this is not direct control, having a comprehensive response plan in place will go a long way to lessening the amount of damage or injury resulting from an accident.

- Housekeeping & Maintenance – this includes both immediate and long-range maintenance procedures designed to keep operations running smoothly and safely. It also covers day-to-day housekeeping concerns such as blocked or crowded areas and debris or tripping hazards on floors.

- Hygiene Practices – this is a paramount health concern. Workers must not be allowed to absorb toxic materials nor carry them home to their families. When using hazardous products and chemicals a change and shower rooms need to be available in these types of environments. Eating, drinking, and smoking should be forbidden in toxic environments, as the ingestion of toxic materials rapidly disperses them in the body.
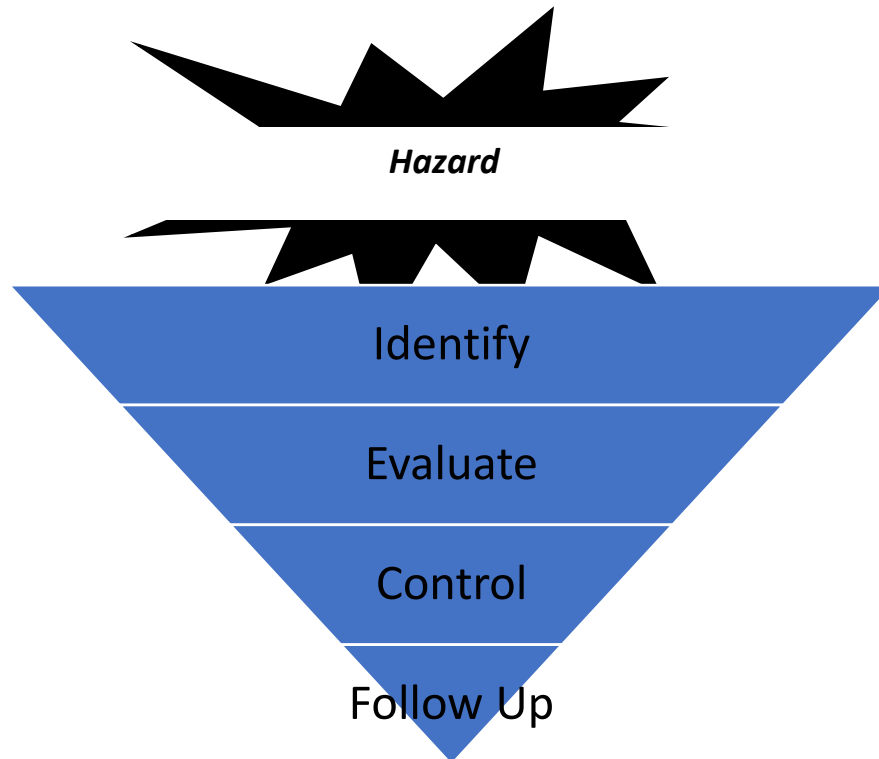
- Personal Protective Equipment – is considered the last line of defense. PPE is the least preferred method of controlling hazards because if the hazard bypasses the PPE there is no other defense mechanism. PPE can be effective if used, stored, and maintained properly. Training in proper use is also required.

Hazard

Identify

Evaluate

Control

Follow Up

Goal: Effectively manage the hazard

Element 2 – Forms & Checklists