

# ***VERO ENERGY INC.***

## Section 4 – Hazard Identification

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## 4.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

### 4.1 PURPOSE

#### *Why do we need to do this?*

In order to reduce the risk of incidents at Vero Energy Inc. worksites, it is necessary to identify hazards and assess and control associated risks. Whenever possible, Vero Energy Inc. will first attempt to eliminate the hazard or substitute a lower risk alternative. However, in all cases Vero Energy Inc. will take measures to reduce the risk to as low as is reasonable and practicable for the work being done.

**Hazard** can be defined as an agent or process that has the potential to cause harm in the form of injury or illness to a person, or damage to a process or equipment.

**Risk** can be defined as the calculated potential for harm from exposure to a hazard.

$$\text{Risk} = \text{Consequence} \times \text{Likelihood}$$

When determining risk it is necessary to first estimate the potential consequence from exposure to the hazard; then calculate the likelihood of the exposure occurring.

### 4.2 RESPONSIBILITIES

#### *Who has to do this?*

Management and Site Representatives are responsible and accountable for assessing the work site and identifying any existing or potential hazards before work begins at the work site.

Management is responsible for ensuring that a report is prepared indicating the results of the hazard assessment and the steps to be taken to reduce the risk of the hazard. This report must be dated and made available to employees and contractors who may be exposed to the hazard(s).

Prior to work being done at the work site, A Hazard Assessment must be performed. This process must be repeated:

- ❖ when a new work process or piece of equipment is introduced
- ❖ when the work process or operation changes, or
- ❖ at regular intervals to prevent the development of unsafe and/or unhealthy working conditions.

Site Representatives are responsible for making sure workers and contractors are aware of the hazards and that steps are taken to reduce the risk to a level that is reasonable and practicable for the work being done.

Employees and contractors are responsible for following procedures and using equipment, including personal protective equipment as required to eliminate or reduce risk from known or potential hazards.

### 4.3 STANDARDS

*Where does it say we have to do this?*

OHS Legislation:

**Alberta OHS Code – Part 2 – Hazard Assessment, Elimination and Control.** Requires employers to carry out a hazard assessment prior to commencing any work at a site. The Code also requires employers to eliminate or control all hazards that are identified to protect workers from the impact of the hazard.

### 4.4 IMPLEMENTATION

*How will we make sure this is put into place?*

The first step in eliminating or controlling hazards is to recognize that they exist. This process will involve competent employees taking time to systematically evaluate the work processes that they are familiar with. Hazard identification should be a regular part of the site inspection process at all worksites. Hazards recognized on these tours must be clearly documented and prioritized according to risk level.

Some hazards are more obvious than others. For example, traffic on a busy highway, emergency exits blocked by materials, and slippery floors are hazards that are clearly visible to all. Assessment and management of the risks associated with these hazards can usually be made and remedied immediately. It is unlikely that there will be any disagreement and the solutions are often simple (for example, improved housekeeping and training).

Other hazards are not so easily recognized; for example, the combination of some chemicals or the toxicity of particular products. Technical and other expertise is often required to identify the hazard and properly determine these risks. For example, technical information must be considered when dealing with issues such as chemical toxicity, airborne contamination, environmental damage, routes of entry etc.

#### 4.4.1 Risk Assessment

After the hazard has been identified, the risk must be evaluated to determine whether or not it is acceptable. Group discussion involving employees who carry out the work and safety meetings help in this determination.

Risk assessment is a tool for analyzing the probability of a procedure, equipment or facility failure and for calculating the impact of the failure on the personnel, the public, the facility or the environment.

A failure which has a *high probability* of occurrence and which has *severe consequences* on the people, equipment or the environment must be prevented, even at high cost. The cost of a failure is much higher in terms of damage and cost to the company. A low probability, minor impact to the environment constitutes a lower risk.

### **Steps in Risk Assessment**

There are three steps that must be taken to determine the risk. These are explained in the charts that follow.

#### **Identify the Consequences**

The potential consequence of exposure to an uncontrolled hazard is defined in terms of impact to the company, equipment, the environment and the company's reputation. Specific definitions for each level (catastrophic, critical, marginal and negligible) are established for Vero Energy Inc. in the following table.

#### **Determine the Probability of Occurrence**

The probability of occurrence is estimated in a range from frequent, occurring repeatedly, remote, not likely, to impossible.

#### **Categorize the Risk**

The risk is then categorized in terms of high, medium, or low risk. Low risk is deemed to be acceptable, medium and high are undesirable or unacceptable, with corrective action required.

Once the risk factors have been determined for all the operations, they can be prioritized and action taken in order of priority. "High Risk" hazards should be flagged for immediate corrective action to ensure workers and contractors are aware of the hazard and the risk involved and to take steps as soon as possible to eliminate or reduce the risk. Until corrective measures have been taken work should not proceed unless temporary measures can be implemented to protect workers, equipment and facilities that may be impacted by an uncontrolled exposure to the hazard.

Workers and contractors who work in the field are expected to fill out the Pre-Job Hazard Assessment prior to performing work (See Appendices).

Identify the Potential Consequences

SEVERITY DESCRIPTIVE WORD	EMERGENCY LEVEL	PERSONNEL/ PROPERTY IMPACT	ENVIRONMENTAL IMPACT	PUBLIC IMAGE AND REPUTATION
CATASTROPHIC	LEVEL III	<ul style="list-style-type: none"> <li>- Multiple fatality, very serious injury, multiple injury</li> <li>- Imminent threat to the public or public property.</li> <li>- Property damage exceeding \$50,000.</li> <li>- Major spill resulting in significant environmental impact</li> <li>- Bomb threat or extortion.</li> <li>- Vandalism, sabotage or theft over \$50,000.</li> </ul>	Long Term (>10 Years) >100% of Natural Resource Affected. Reporting to government authorities required.	National attention attracted. Media coverage at national level.
CRITICAL	LEVEL II	<ul style="list-style-type: none"> <li>- Fatality/Medical aid/ lost time.</li> </ul>	<ul style="list-style-type: none"> <li>- Potential threat to public</li> <li>- Property damage of \$5M to \$50M</li> <li>- Spill off-site impact on environment, requires reporting.</li> <li>- Theft, vandalism, sabotage \$5M to \$50M</li> <li>- Vehicle accident more than \$1000 damage; hit-and-run; injuries.</li> </ul>	<ul style="list-style-type: none"> <li>- Severe weather conditions</li> <li>- Serious fire or explosion</li> </ul>
Medium Term	(2-10 Years)	100% of Provincial Resource Affected. Reporting to government authorities required.	Provincial attention attracted. Media coverage at provincial level.	MARGINAL LEVEL I
<ul style="list-style-type: none"> <li>- Public Concern</li> <li>- small non-reportable spill on-site</li> </ul>	<ul style="list-style-type: none"> <li>- Small controlled fire.</li> <li>- Short or Medium Term</li> </ul>	<ul style="list-style-type: none"> <li>&lt;1% of Local Resource Affected</li> <li>No reporting required</li> <li>Community or Local Attention.</li> </ul>	Local medial attention only. MINIMAL	LEVEL I

- First aid injury

- Property damage, theft or vandalism under \$5,000
- Vehicle accidents less than \$1,000 damage; no hit-and-run; no injuries.

Short Term

(1-2 Years)

Confined to property or close vicinity

Individual or None

No medial attention.

## Determine the Probability of Occurrence

PROBABILITY		
PROBABILITY VALUE	DESCRIPTIVE WORD	DEFINITION
3 in 10	Frequent	Likely to occur repeatedly during life cycle of system
3 in 100	Probable	Likely to occur several times in life cycle of system
3 in 1000	Occasional	Likely to occur sometime in life cycle of system
3 in 10 000	Remote	Not likely to occur in life cycle of system, but possible
3 in 100 000	Improbable	Probability of occurrence cannot be distinguished from zero
indeterminate	Impossible	Physically impossible to occur

## Categorize the Risk

RISK ASSESSMENT MATRIX						
CONSEQUENCE	PROBABILITY					
	Frequent	Probable	Occasional	Remote	Improbable	Impossible
Catastrophic	High	High	High	Medium	Low	Low
Critical	High	High	Medium	Low	Low	Low
Marginal	Medium	Medium	Low	Low	Low	Low
Negligible	Low	Low	Low	Low	Low	Low

**High Risk** - Unacceptable for long term, must take immediate corrective action

**Medium Risk** - Undesirable, take corrective action as soon as reasonable and practical

**Low Risk** - Acceptable, no further action required

#### **4.4.2 Job Safety Analysis**

##### *What is a Job Safety Analysis (JSA)?*

Job safety analysis (JSA) is the systematic examination of a job intended to identify potential hazards, assess the degree of risk, and evaluate practical measures to control the risk.

JSA is not a workplace inspection or an audit procedure. It is a systematic examination of workplace conditions and practices to determine if they meet provincial occupational health and safety standards and company policies and procedures. The JSA will also assess whether there is room for improvement in making the work practices under consideration as safe as possible for the workers involved.

Competent workers, contractors and supervisors perform a JSA by analyzing jobs through discussion and observation. This process ensures that people who are most involved in the work are included in the assessment and promotes “buy-in” of those who will be most affected by the recommendations.

The outcomes of the JSA are prepared into a written report that is provided to the participants and reviewed by all involved prior to being accepted as company policy.

##### *How do you carry out a JSA?*

#### **1. Select the job to be analyzed.**

Prioritize jobs according to perceived levels of risk.

Select the highest risk jobs to be analyzed first, based on statistical analysis of incidents, absenteeism, exposure to harmful chemicals, potential for severe injuries or illness, new work processes, infrequently performed jobs, working alone, working in isolated places, potential for violence in the workplace.

Lower risk jobs should be reviewed to ensure workers are aware of any potential hazards and are trained in dealing with those hazards.

#### **2. Break the job down into a series of tasks.**

A *task* is a segment of an overall job. (Example: starting the vehicle is a task in the job of driving.)

Completion of each task in its proper sequence leads to the completion of the job. Completing the tasks in correct sequence is an important part of job safety analysis, as any task placed out of sequence may cause potential hazards to be missed, or may introduce hazards that do not normally exist.

When conducting a JSA, each task is recorded in its proper sequence and notes are made about what is to be done, with each step beginning with an action verb. (Example: Job – Changing a tire. Tasks – Park vehicle, get spare tire and tool kit, pry off hub cap, loosen lug bolts, jack up car.....etc)

### 3. Identify potential hazards associated with each task.

For each task, identify the hazards and potential hazards that could harm the worker involved. Consider “What if” scenarios for each task, to determine if a change in conditions such as weather, location, equipment, experience, environment etc, could present a new hazard. (Example: Changing a tire on a busy highway shoulder presents different hazards than changing a tire in your garage.)

### 4. Determine measures to control the hazards.

When all hazards and potential hazards have been identified, the next step is to determine ways of reducing the risk presented to workers by eliminating the hazard or mitigating the risk level.

**Hazard control strategies include:**

- ❖ Eliminate the hazard
- ❖ Substitute with less hazardous tasks or materials
- ❖ Isolate the hazard from the worker
- ❖ Isolate the worker from the hazard
- ❖ Implement administrative controls such as limiting the time a worker is exposed to the hazard
- ❖ Provide the worker with Personal Protective Equipment. Note that personal protective equipment should be the last resort, and only used until a permanent solution to the hazard can be developed.

### 5. Communicate the information to others.

Once the measures to control the hazard have been developed, the results must be recorded and communicated to all workers and contractors who are involved in the job.

Usually the results of the JSA are converted into a Safe Work Procedure format.

A risk assessment can also be carried out to identify the risk level for each job – refer to the section on Risk Assessment in this manual for further information.

This will result in a step by step procedure that provides workers and contractors with information on how to carry out the tasks involved in the job, the sequence for carrying out the tasks, the hazards identified for each task and the hazard control measures to be implemented for each task. The equipment required for the job and the personal protective equipment required to ensure the worker is protected should all be listed for each step.

A record of all Safe Work Procedures must be kept and made available to all workers.

The JSA process will be reviewed and updated as a part of the overall review of the Health and Safety Management System, whenever the applicable Occupational Health and Safety legislation is updated, in the event of a serious incident, when there are any changes to the work being done and if new equipment or materials are acquired.

### **4.4.3 WORKING ALONE**

The Occupational Health and Safety Code includes specific rules covering situations where employees work alone (Part 28).

Vero Energy Inc. will, whenever possible, eliminate the risk of employees working alone, as well as comply with the working alone provisions for operations where employees must work alone.

**Definition:** An employee is considered to be working alone if the employee works alone at a work site in circumstances where assistance is not readily available when needed.

In this instance the employer **must**:

#### **Conduct a hazard assessment**

Closely examine and identify existing or potential safety hazards in the workplace. The assessment must be in writing and communicated to all affected staff. Where practicable, employers must also involve affected employees in conducting the hazard assessment, and in the elimination, reduction or control of the identified hazards.

#### **Eliminate or reduce the risks**

Employers must take practical steps to eliminate the hazards identified. If it is not practicable to do so, employers must implement procedures to reduce or control the hazards.

#### **Establish an effective means of communication**

Employers must have a communication system for employees to contact other people who can respond to the employees' need. The system must be appropriate to the hazards involved.

#### **Ensure employees are trained and educated**

Employers must ensure their employees are trained and educated so they can perform their jobs safely. Employees must be made aware of the hazards of working alone and the preventative steps that can be taken to reduce or eliminate potential risks.

These rules take into account a wide variety of situations where employees work alone. Their intent is to require employers to consider the hazards specific to their work sites and to adopt safety measures that address these hazards.

#### **4.5 MONITORING**

##### *How will we check to see that this is carried out?*

Hazard identification and assessment will be carried out as a regular part of worksite inspections conducted at work sites.

Management, site representatives and foremen will ensure that a hazard assessment is conducted before work is started at a site and on a regular basis while work is carried on to prevent the development of unsafe and/or unhealthy working conditions.

In the event of an incident or injury at the site, management shall ensure that part of the incident investigation includes a hazard identification and assessment process.

When there are changes to a work process or operations at the site, management shall ensure that a new hazard identification and risk assessment is carried out.

If a new work process is introduced, management shall ensure that a new hazard identification and risk assessment is carried out.

#### **4.6 REVIEW/FOLLOW-UP**

##### *When will we review this component for continuous improvement?*

- ❖ Standards and requirements for hazard identification and risk assessment will be reviewed as a part of the regular review of the Health and Safety Management System; whenever the applicable OHS Legislation is updated or in the event of a serious incident.
- ❖ The hazard identification and risk assessment section of the Health and Safety Management System will be reviewed annually as a part of the Basic Safety Program Audit protocol.