

VERO ENERGY INC.

Section 5 – Rules & Work Procedures



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5.0 RULES AND WORK PROCEDURES

5.1 PURPOSE

Why do we need to do this?

The following rules and safe work practices are based on industry and legislative standards. Generally, they identify the minimum requirements for conducting a specific task and should be followed under normal conditions. If deviation from these practices is necessary, the production supervisor, foreman or production superintendent must be consulted and an equivalent level of safety assured.

The methods by which tasks are performed continually change. If there is a more practical or safer method of performing a task that requires a change in the written procedure, the lead operator should be informed. Procedures will be changed to suit distinct area requirements while maintaining the minimum level of safety identified in applicable legislation and by good industry practice. The intent is to ensure the greatest practical level of safety while performing these tasks. All employees and contractors are encouraged to reference this information as well as participate in the review, development and continuous improvement of these practices.

5.2 RESPONSIBILITIES

Who has to do this?

Management is responsible for ensuring that rules, procedures and codes of practice are written and implemented. Site supervisors, managers, operators and contract operators are expected to participate in the development of the procedures as required.

Employees and contractors are responsible for ensuring they are aware of the rules, procedures and codes of practice that apply to them and must adhere to the practices included in the appropriate documents.

5.3 STANDARDS

Where does it say we have to do this?

OH&S Legislation:

All provincial and federal occupational health and safety legislation requires employers to develop and implement specific rules, procedures and codes of practice to ensure worker safety when carrying out hazardous work.

5.4 IMPLEMENTATION

How will we make sure this is put into place?

5.4.1 LOSS CONTROL, HEALTH & SAFETY RULES

Smoking, Lighters and Health Rules

Smoking is permitted only in designated areas of the office and/or operating facilities.

Security

Ensure all company property is protected from theft, vandalism, etc. Please remember to lock company vehicles, offices, yards and shops when left unattended for prolonged periods. Leave yard lights on, where applicable, to reduce the potential for loss.

The company will not be responsible for personal property left at a worksite or in a vehicle.

Management must approve removal of any company tools, equipment or materials from the worksite.

Be sure not to remove any drawings or take pictures of any of the company's operating facilities without written consent.

Personal Conduct

Use of, or being under the influence of alcohol or illegal drugs while on the job is strictly prohibited. Employees and contractors taking prescribed or over the counter medication which may impair their ability to work, shall not engage in any activity that may endanger the health or safety of themselves or other employees.

Beards or excess facial hair are not permitted on any employee or contractor who may be required to wear respiratory equipment. The equipment must seal to the face.

Employees and contractors shall not work around moving machinery if they are wearing loose clothing, jewellery, or long hair, if not contained.

Employees shall not engage in practical jokes, horseplay, boisterous conduct, or unnecessary running at the work site.

Possession and use of firearms on the work site is strictly prohibited.

Housekeeping

Workplaces, vehicles, and buildings shall be kept clean and orderly at all times.

If slippery conditions exist, use mats or other material to reduce hazards.

Floors and platforms shall be kept free of any obstruction that may lead to tripping or stumbling.

5.4.2 PERSONAL PROTECTIVE EQUIPMENT

Hard Hats:

CSA approved hard hats will be supplied by the company or contractor and must be worn during field operations or whenever falling materials or a bump hazard exists. Hard hat liners must be fire retardant.

Safety Boots:

Shall be provided by the employee or contractor and must be worn during field operations or wherever a hazard exists for foot injury. Safety boots should be a lace-up type as these are easier to remove should an injury occur and they also provide ankle support. Safety boots shall be chemical resistant and shall meet a CSA Grade 1, green patch standard.

Gloves:

Appropriate gloves shall be worn when handling hot, sharp or splintered material.

Chemical Clothing:

Shall be provided by the company and worn whenever there is a potential of being splashed by caustics, acids or other hazardous substances. Consult the appropriate MSDS for the required protective equipment. This equipment includes PVC clothing, rubber boots, goggles, face shields, rubber gloves, etc.

Eye Protection:

CSA approved safety glasses with side shields or goggles shall be worn as the job requires and will be provided by the company. Prescription glasses shall be hardex treated. Wear safety glasses whenever chipping, grinding, cutting, etc. Contact lens are not recommended to be worn when performing the above work.

Fire Retardant Clothing:

Shall be provided by the company or contractor and worn whenever the potential exists for a flash fire or whenever working on an operating lease. Fire retardant clothing must be kept clean to ensure its fire retardant qualities.

Vero Energy Inc.'s standard for fire retardant clothing includes any outer layer clothing that will not support combustion, including Nomex III and Proban.

Fire retardant clothing shall be worn as the outer layer of clothing. Other clothing worn should be 100% natural fibre material. This includes cotton and wool. Synthetic and nylon materials should be avoided even under fire retardant outerwear.

Fire retardant clothing shall cover full arms and legs. Shorts and short-sleeved shirts are not permitted.

PVC rainwear is inherently fire retardant and may be worn as an outer layer. Plastic and synthetic rainwear is not permitted.

Hearing Protection:

Shall be provided by the company and worn as the job requires or as posted. Workers exposed to excessive noise greater than 85 dBA are required to wear hearing protection.

Breathing Apparatus:

Shall be worn as required for a specific hazard and/or as identified in a specific MSDS.

Fall Protection:

All persons working over a height of 3 metres (10 ft.), provided he or she is not on a proper work platform with guardrails, shall wear a full body harness and attached lanyard. Lanyards shall be no more than 1.5 metres (5 ft.) long and the free end shall be securely attached to a structure that is able to withstand any impact it may be exposed to. It is preferable that a shock-absorbing lanyard be used. Full harnesses shall also be worn whenever work is done in a suspended cage or elevated mobile platform. All fall arrest equipment shall be inspected routinely and kept in a clean and usable condition. Any fraying of threads or straps that affect more than 20% of the total strap width shall be repaired or the harness replaced. Safety belts may be used in situations where a fall is not possible but access is restricted (such as working on a platform without guard rails or on a roof). In such cases, the lanyard must be attached to restrict the worker's access to the edge of the structure.

5.4.3 RESPIRATORY PROTECTIVE EQUIPMENT CODE OF PRACTICE

Application

OH&S legislation requires appropriate Respiratory Protective Equipment (RPE) be provided by the employer and worn when a worker is, or may be exposed to, an "Immediately Dangerous to Life or Health" (IDLH) atmosphere when oxygen concentration drops below 19.5% or when airborne contaminants exceed the Occupational Exposure Limit (OEL). OELs are identified by substance or chemical in the provincial Occupational Health and Safety Regulations or the appropriate MSDS (material safety data sheet). OELs are generally quoted in parts per million (PPM). (See Gas Detection, section 5.6.)

Respiratory Protective Equipment Types

Generally, there are two types of RPE used in the oil and gas industry, supplied air breathing apparatus & half face (filter) respirators.

Filter Respirators:

Are only able to filter a limited number of airborne contaminants at low concentrations for relatively short periods of time;

Are usually only used for dusts and organic vapours;

Before use, employees and contractors must be trained on when to change the filter cartridge, the limitations of the cartridge they are using and a facial seal fit test must be performed and recorded.

Filter type respirators ARE NOT TO BE USED IN HYDROGEN SULPHIDE OR OXYGEN DEFICIENT ATMOSPHERES.

Supplied Air Respirators:

Are common in two forms, as an SCBA (self-contained breathing apparatus, where the air bottle is worn on the back) and remote SABA (supplied air-breathing apparatus, where air is supplied by a hose). Selection of the appropriate breathing apparatus generally depends on the duration of the job (supplied air is normally used for longer duration jobs).

Must be worn whenever an IDLH atmosphere is to be entered, including oxygen deficient atmospheres (less than 19.5% by volume) or toxic atmospheres (where the occupational exposure limit is exceeded and a cartridge respirator cannot be used).

Must meet CSA Z94.4-02 standards, including a 30-minute air supply.

Be of the type where positive pressure is maintained in the mask and the mask is equipped with a nosepiece during cold weather.

Supplied air respirators must:

- ❖ Not be used with a hose more than 90 metres (300 ft.)
- ❖ Be continuously attended or be equipped with an audible alarm that warns when the supply bottle reaches 500 PSI.
- ❖ Be used with hoses that are a standard 1/4" inside diameter, hydrocarbon and chemical resistant, non-kinking, only used for breathing air and rated for a working pressure of 250 PSI.
- ❖ Be equipped with a 5-minute escape bottle for emergency purposes.

Fit Testing

There are two easy and generally accepted methods of fit testing - mechanical and qualitative. The mechanical method of fit testing is usually reserved for positive pressure, supplied air respirators because the flow of air past the seal of the mask is outward past the seal. This method involves either blocking the inlet valve to the mask and gently inhaling so that the mask is drawn into the face, or blocking the exhalation valve and gently exhaling. Either way, the wearer should be aware of any leakage past the facial seal. This method should be used whenever supplied air RPE or a cartridge-type dust mask is donned.

The qualitative method is generally required when an organic vapour filter respirator is used (it will not work for dust masks). As part of pre-use training, Isoamyl Acetate Vapour (Banana Oil) is passed under and round the seal of the respirator. If the wearer can smell the banana, the seal and fit are not adequate. This test should be performed when the wearer is making movements that would approximate a normal work situation. All fit tests of this nature should be recorded in the wearer's training file, quoting the type of mask and cartridge used and the date of the test. A copy of the fit test record can be found in the Appendices.

Classification of Respiratory Hazards

Review the work, the confined space to be entered and the substances normally associated with the space.

Test and inspect for suspected substances. If possible, reduce or eliminate the airborne contaminants so breathing apparatus is not required, or is only necessary as additional protection. If unsure of the potential atmosphere, wear breathing apparatus.

It is the responsibility of operations personnel to ensure all potential hazardous substances are identified, discussed with workers and the appropriate RPE is selected and used.

Consult the appropriate MSDS for information regarding allowable safe concentrations of airborne contaminants and the appropriate RPE.

Training

All employees and contractors shall be properly trained in the use, care and limitations of respiratory protective equipment before it is used. Training is provided through external training courses such as H₂S Alive and internal training sessions during shutdowns, etc.

Training on specific equipment shall also be provided before equipment is used (consult with manufacturer recommended use, care and maintenance guidelines).

The VP, Operations is responsible to ensure all employees and contractors are properly trained in the use and care of respiratory protective equipment before it is used at any Vero Energy Inc. property or job.

Considerations For The Use And Care Of Respiratory Protective Equipment

Ensure employees and contractors are fully trained in the equipment's use and are aware of potential hazards.

Ensure workers in the area are aware of potential hazards.

Always ensure a backup person is present and is able to affect a rescue if required. Ensure backup equipment is also available and in operable condition.

If a remote supplied air system is being used, always ensure that the backup person is tending the air supply bottle.

Always check and ensure the breathing apparatus and air supply are in an operable condition before entering into an IDLH atmosphere.

Always check facial seal prior to entering an IDLH atmosphere.

Do not enter a flammable environment, even with breathing apparatus on.

Always plan the work, ensuring that enough air will remain to allow your safe exit from the IDLH atmosphere. Do not work beyond the alarm point (usually 500 PSI). Clean the mask, place it in a clean plastic bag and ensure the bottle is refilled when finished.

Maintenance

- ❖ All respiratory protective equipment shall be kept clean, operational and ready for use at all times with air supplies full.
- ❖ Emergency respiratory protective equipment shall be checked at least on a monthly basis to ensure the above is maintained.
- ❖ A qualified technician, a minimum of once every three years, shall check respiratory protective equipment even if it has not been used.
- ❖ Bottles shall only be refilled with respirable breathing air that is tested and meets CSA Standard Z.180.1-00. This test determines dew point, carbon monoxide, carbon dioxide and total hydrocarbon levels.
- ❖ Do not refill bottles with air from a utility air compressor or any other non- approved source.

Inspect Respiratory Protective Equipment, BEFORE and AFTER Use:

Mask:

For cracks or tears, physical damage or distortion, inflexibility of rubber parts, cracked or badly scratched lenses. Check nose cup for condition and presence of inhalation valves, exhalation and inhalation valves for proper installation and function.

Regulator:

Inspect for cleanliness, damaged or missing parts. Check the valve positions to ensure bypass and purge valves are closed and that supply valve is open. Inspect gauges for proper operation and calibration. If a new type RPE, also inspect face seal gasket.

Hoses:

For cracks, cuts or damage. If the high-pressure steel braid hose is cut to the steel braid, replace it immediately. Ensure the coil inside the mask supply hose (older models) is in proper position to prevent any kinking of the hose. On supplied air respirators, check the egress bottle check valve by disconnecting the supply hose and briefly opening the bottle – air should not escape through the open supply hose. Ensure all connections are of the proper type.

Filter:

Check for installment of improper cartridge - ensure the correct filter cartridge is provided for the substance or chemical to be encountered. Check the expiry date on cartridges.

Bottle:

Check for proper connections and seals. Check the pressure gauge to ensure proper operation and calibration. Check overall condition for dents, deep cuts or abrasions, pressure and hydrotest date.

Cleaning & Disinfecting:

Persons using RPE are responsible for cleaning, inspecting and ensuring it is ready for the next use.

Remove and dispose of filter cartridges unless apparatus has only been used a short time and will be used again by same wearer.

Remove face pieces and clean with soap and water, mild bleach solution or cleaner recommended by manufacturer.

Dry masks and seal them in a clean plastic bag.

5.4.4 CONFINED SPACE ENTRY CODE OF PRACTICE**Introduction**

When a confined space must be entered, an entry-specific Code of Practice must be developed to ensure the entry is done safely. This guideline will assist the Site Supervisor or Foreman to develop a Code of Practice.

Application

This guideline applies to all employees and contract operators. Site Supervisors and Area Foremen shall confirm compliance with the guidelines and Code of Practice.

Definition of a Confined Space

A confined space is an enclosed or partially enclosed space. The confined space is or may become hazardous because of:

- ❖ design or construction,
- ❖ location,
- ❖ atmosphere,
- ❖ materials or substances in it,
- ❖ difficulty of escape,
- ❖ difficulty of rescue.

Examples of confined spaces include:

- ❖ free water knockouts,
- ❖ treaters,
- ❖ sumps and cellars,
- ❖ tanks (production and mud),
- ❖ piping,
- ❖ exchangers,
- ❖ condensers,

- ❖ towers,
- ❖ pits,
- ❖ duct work,
- ❖ re-boilers,
- ❖ salt bath heaters,
- ❖ boilers,
- ❖ excavations and trenches,
- ❖ any building that utilizes sour gas for instrumentation,
- ❖ any building with restricted access or egress which may contain hydrocarbons.

Code of Practice

Where work is conducted in a confined space, a Code of Practice shall be developed to ensure this work is done safely.

The Code of Practice shall contain:

- ❖ A means of clearly identifying confined spaces at the worksite.
- ❖ The qualifications and training needed by workers who will enter these confined spaces.
- ❖ The means of isolating the confined space.
- ❖ The means of ventilating the confined space.
- ❖ The tests or measurements that will be taken to determine the presence of harmful substances or oxygen deficiencies.
- ❖ Information on the availability and proper use of personal protective equipment.
- ❖ The rescue procedures and a list of rescue equipment.
- ❖ The means of communication between workers and between the workers and outside help.
- ❖ The identification of other hazards that may be present in the confined space and may compromise the safety of workers.

Qualifications and Training for Confined Space Entry

Prior to entry into a confined space, the designated Site Supervisor will train workers on the applicable provisions of the Code of Practice. Training will include, as applicable:

- ❖ Respiratory protective equipment requirements.
- ❖ Training on all required respiratory protection equipment.
- ❖ Chemical and physical hazards which may be encountered in the confined space.
- ❖ Physical characteristics and layout of the confined space.
- ❖ Means of de-energizing the confined space.
- ❖ The means of isolating the confined space.
- ❖ The means of ventilating the confined space.
- ❖ The atmospheric tests or measurements that will be taken to determine the presence of harmful substances or oxygen deficiencies.
- ❖ The rescue procedures and a list of required rescue equipment.
- ❖ The identification of other hazards that may be present in or near the confined space which may compromise the safety of workers.

Entry Procedures

Isolating

The confined space must be isolated from all hazardous sources. Isolation means that all lines leading to or from a vessel shall be isolated by blinding, double block and bleed or by disconnecting lines.

Double block and bleed requires having two block valves in the line with a bleed valve between them to prevent pressure build-up. The Site Supervisor shall confirm that the bleed-off valve is locked in the open position, the block valves are locked in the closed position and the bleed-off valve is neither frozen nor blocked with sediment.

When lines are disconnected, both ends shall be capped or bullplugged. Boilers Branch (Alberta Boilers Safety Association) inspectors require that all piping from the vessel is removed if entry into the vessel is required for their inspection.

When blanking or blinding methods are used, the blanks or blinds must be installed at the closest flange to the vessel. The piping that has been blanked or blinded must be clearly marked to show that a blank or blind has been installed. Be sure blinds and gaskets are rated for the service and the pressure anticipated and installed on the pressure side of the blind.

Personnel who will enter the vessel should personally check that adequate isolation methods have been used.

If Vero Energy Inc. considers it impractical to isolate the confined space, procedures shall be developed that provide equal or greater protection to workers.

Purging

Confined spaces that contained a hazardous substance must be purged and/or flushed with a suitable neutralizing agent. If the vessel contained flammable or toxic gases, steam or an inert gas such as nitrogen should be used to purge out any remaining traces of that substance.

Ventilating

Confined spaces must be properly ventilated to ensure the space is safe for entry. Ventilating will reduce the risk of oxygen deficiency, toxic atmosphere or flammable atmosphere.

Natural ventilation (relying on winds and/or thermal drafts) is not dependable and is not acceptable for ventilating confined spaces. Blowers, air movers or ejectors must be used. The ventilator must be supplied with clean air and not placed near vehicle exhausts or where contaminants could be picked up from adjacent areas.

The ventilating device must be electrically bonded to the vessel or tank to avoid a build-up of static electricity.

The amount of ventilation required depends on conditions, and will be determined by testing. Ventilation must continue until the oxygen content is 19% or more, toxic contaminants are below their O.E.L.s and, for "hot work", flammable contaminants are absent.

Ventilation can also be used to control extreme temperatures or other discomforts.

De-Energizing

Many vessels contain electrical equipment such as mixers, skimmers and paddles. These and any other powered equipment associated with the vessel must be locked out and tagged before entry. The equipment will be tested to ensure it will not operate and is in a zero energy state.

Under normal conditions, only the worker who installs a lock shall remove it. In an emergency situation the Site Supervisor, after verifying that no workers will be endangered by removing a lock, may designate a competent worker to remove the lock.

Atmospheric Testing

Prior to completion of the work permit, atmospheric testing will be done in the following order:

- ❖ Oxygen testing using an O₂ testing unit which shall be calibrated in fresh air to 20.92% immediately prior to the test.
- ❖ The atmosphere will be tested for LEL using an approved explosive meter. This meter will be checked for integrity prior to the test.
- ❖ Hydrogen sulphide levels will be measured with a tested pump using a correct indicator tube or an electronic tester, properly calibrated and zeroed in fresh air before use.
- ❖ Toxic gases not addressed in this section will be tested for, if considered necessary by the supervisor.

Oxygen Levels

Oxygen levels must be maintained between 19% and 23%. Levels below 19% are considered oxygen deficient. Strenuous activity or hot work could reduce the remaining oxygen to a level insufficient to support life.

Levels above 23% are considered oxygen enriched. An oxygen-enriched atmosphere widens the explosive range of flammable/explosive substances.

Oxygen tests must be performed before other atmospheric test. An enriched or deficient oxygen level will result in false readings when checking for flammable or toxic substances.

Flammable/Explosive Substances

A flammable/explosive atmosphere is an atmosphere which contains more than 10% of the Lower Explosive Limit (L.E.L.) of a substance.

Explosive limits are the concentrations through which mixtures of the flammable gas in air will burn. There is a Lower Explosive Limit (L.E.L.) and an Upper Explosive Limit (U.E.L.). Gasoline, for example, has an L.E.L. of 1.5% and an U.E.L. of 7%. Outside these limits, the mixture of gas and air is either too lean or too rich to ignite.

Toxic Substances

Although contaminants in the air may be toxic, they are considered safe as long as they stay below certain concentration. These levels are based on past experience and research, and are known as Occupational Exposure Limits (O.E.L.s) of the contaminant substances.

Eight hour O.E.L.s refer to the time weighted averages of concentrations in air that are safe under the conditions defined in the Alberta Chemical Hazards Regulation.

Because of the wide variation in individual susceptibility, a few workers may experience discomfort from concentrations below the occupational exposure limit, or more seriously, suffer aggravation of a pre-existing condition.

Some examples of O.E.L.s are:

- ❖ Hydrogen Sulphide - 10 ppm (parts per million)
- ❖ Carbon Monoxide - 25 ppm
- ❖ Methanol - 200 ppm

If the vessel contained a corrosive substance such as an acid, a suitable neutralizing agent should be used to neutralize any remaining traces.

Detection Equipment

O₂ Detectors

O₂ detectors are used to provide personnel with an exact reading of the oxygen content in the confined space. In order to get an accurate reading of the O₂ content; the detector must be calibrated to 20.9% O₂ in a known source of fresh air.

Calibrating the detector is not to be taken lightly: an inaccurate reading could endanger someone's life. The batteries must also be checked prior to use.

Note: It is important that the oxygen content of an area be established before combustible gas levels are tested. An abnormally high or low oxygen reading will result in an inaccurate combustible gas reading. If toxic gas readings are taken with an electronic detector, the same problem occurs.

Combustible Detectors

Combustible detectors or explosion meters require zeroing and testing prior to use. Zeroing must be done in a known source of fresh air. Testing the meter involves using a methane test kit. In combustible enriched areas the needle may rise sharply and fall back around the zero area. If this is not noticed, an erroneous low reading will be recorded.

H₂S Detectors

Electronic H₂S detectors come in many various models, but their purpose is always the same; measuring the quantity of H₂S in a specific area. Zero the equipment in a known source of fresh air and calibrate using the proper testing equipment. Only intrinsically safe models shall be used in flammable atmospheres.

The O.E.L. is 10 ppm. An alarm or warning device will indicate when the O.E.L. is reached.

Respiratory Protective Equipment

There are two types of respiratory protective equipment that may be used during confined space entry. They are self-contained breathing apparatus (SCBA) and supplied-air breathing apparatus (SABA). Refer to Section 5.4.3 for more information on Respiratory Protective Equipment.

Note: Air purifying respirators must not be used in oxygen deficient or IDLH (Immediately Dangerous to Life and Health) atmospheres.

Selection of Breathing Apparatus

Entry without Breathing Apparatus

Entry will be allowed without the use of breathing apparatus under the following conditions:

- ❖ Oxygen content must be between 19% minimum and 23% maximum.
- ❖ The atmosphere must be below 10% of L.E.L.
- ❖ The concentration of Hydrogen Sulphide must be below 10 ppm, tested before entry and regularly throughout the job.

Entry with Breathing Apparatus

Positive pressure SCBA. or SABA. shall be worn by a worker entering the confined space if:

- ❖ An oxygen test is not done.
- ❖ The oxygen test yields a result below 19%.
- ❖ The atmosphere is between 10% and 20% L.E.L, tested before entry and throughout the job.

Note: No entry of any description will be allowed if the atmosphere is above 20% L.E.L.

- ❖ The toxic gas level exceeds the 8 hour occupational exposure limit.

Safety and Rescue Strategy

- ❖ A safetywatch shall be positioned at the entrance to the confined space. The safety watch shall be equipped with the same respiratory protection as the worker or workers in the confined space.
- ❖ One other person shall be on-site to monitor breathing air, assist with rescue and summon additional help if necessary.
- ❖ A pre-determined signal shall be used when visual contact cannot be maintained between a worker in a confined space and the safety watch. All personnel shall agree on the signalling system.
- ❖ All rescue, first aid and fire suppression equipment shall be located as close to the site of entry as practical.

Work Permits

A work permit shall be issued prior to entry. The following shall be addressed when completing the permit:

- ❖ isolating,
- ❖ de-energizing,
- ❖ purging,
- ❖ chemicals,
- ❖ protective equipment,
- ❖ atmospheric conditions inside the space,
- ❖ wind and atmospheric conditions (i.e. electrical storms),
- ❖ acceptable equipment,
- ❖ open flame burning,
- ❖ welding,
- ❖ fire protection,
- ❖ standby personnel,
- ❖ communications,
- ❖ rescue equipment and procedures,
- ❖ other work activities.

Pre-Job Meeting

Prior to entry into a confined space all workers will be briefed on the contents of the work permit, hazards, scope of work and entry and rescue procedures.

Post-Entry Procedures

- ❖ All personnel and tools shall be accounted for before closing the confined space.
- ❖ A thorough inspection shall be conducted prior to start-up.
- ❖ A debriefing shall be conducted with all personnel to determine what procedural changes should be made for the next entry.

5.4.5 HYDROGEN SULPHIDE CODE OF PRACTICE

Hydrogen sulphide (H_2S) is perhaps the single most dangerous hazard faced by oilfield personnel.

A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death. There is a very narrow margin between consciousness and unconsciousness; between unconsciousness and death.

The principal hazard to personnel is respiratory arrest. Spontaneous breathing will not resume without artificial respiration. After breathing has stopped, the heart may continue to beat for 4-6 minutes. Prompt rescue and resuscitation may save the victim's life.

Purpose

This section provides guidelines for all Company and contract personnel required to work in areas where H_2S is present.

Personnel may also use applicable parts of this section as a Safe Work Guideline for working alone.

All workers should be aware that production (and other) buildings are potential confined spaces. These buildings may have restricted access and egress, and a leak of sweet or sour product could render the atmosphere Immediately Dangerous to Life and Health. The guidelines in this section will improve the safety of personnel working in these buildings.

H₂S Characteristics

- ❖ Hydrogen sulphide is a highly toxic gas. In high concentrations it can kill in seconds by paralysing the respiratory system.
- ❖ H_2S is colourless, flammable, heavier than air and highly soluble in water. In low concentrations, it smells like rotten eggs; in moderate concentrations it quickly deadens the sense of smell.

H₂S Detection

Only approved H_2S detectors will be used. These detectors may include tube type detectors, personal monitors or continuous monitors. H_2S ampoules will not be used. Breathing apparatus will be used when checking for H_2S .

Detection equipment will be tested and calibrated as directed by the manufacturer and, if applicable, will be zeroed in fresh air before use.

H₂S Toxicity Table

% BY VOLUME	CONCENTRATION (PPM)	EFFECTS
0.000001 - .00003%	0.01 - 0.3	Odour threshold.
.0010%	10	8-hour occupational exposure limit.
.0015%	15	15-minute occupational exposure limit.
.002%	20	Occupational exposure limit ceiling; no workers may be exposed to 20 ppm H ₂ S at any time.
.01%	100	Loss of smell in 2-15 minutes. May burn throat, cause headache and nausea.
.02%	200	Sense of smell lost rapidly. Burns eyes and throat.
0.05	500	Loss of reasoning and balance. Respiratory arrest in 2 to 15 minutes. Prompt resuscitation needed.
0.07%	700	Immediate unconsciousness. Causes seizures, loss of bladder and bowel control. Breathing will stop and death will result if not rescued promptly. Immediate resuscitation needed.
0.1%	1000	Causes immediate stoppage of breathing. Death or permanent brain damage will result unless rescued promptly. Death from cardiac arrest or permanent brain damage will result within 4 to 6 minutes after breathing stops.

Responsibilities

Operators shall:

- ❖ Maintain safe and efficient operations by keeping all equipment under close surveillance.
- ❖ Maintain a high level of general lease housekeeping. All work crews shall clean up after themselves.
- ❖ Report problems. Correct the problem if trained to do so.
- ❖ Note any unauthorized commercial or non-commercial activities or traffic within the field area and report it to the Foreman.
- ❖ Maintain close surveillance of contract crews under their supervision.
- ❖ Prevent the development of hazardous conditions by knowing the condition, function and possible weaknesses of every piece of equipment under their operating jurisdiction.

General Field Operations*Operating Personnel*

Operating personnel shall:

- ❖ Mask up for work if the potential H₂S environment may exceed 10 ppm.
- ❖ Implement the buddy system whenever mask up may be required. The buddy system provides a back-up person to perform a rescue.
- ❖ Inform the Site Supervisor of any changes, problems or variations from normal conditions encountered during their shift.
- ❖ Note any work requiring the attention of a maintenance crew and report it to the Site Supervisor who will initiate corrective measures.
- ❖ Report all leaks regardless of how they minor they may appear to be.
- ❖ Conduct a complete inspection of the field truck and safety equipment at the beginning of each shift.
- ❖ Know:
 - how to use of self-contained breathing apparatus and be aware of its location,
 - emergency rescue procedure,
 - emergency blowout and evacuation procedure,
 - the operation of safety equipment on operating and maintenance vehicles,
 - the location of all wells and installations in their area of operation,
 - the basic operation of all field installations with their safety features and safety shutdown capabilities and controls.
- ❖ Obtain H₂S Alive training and certification as soon as possible after hire.
- ❖ Trim head and facial hair to prevent interference with respiratory protective equipment.

Lease Conduct

Before entering a lease the operator shall check for:

- ❖ wind direction,
- ❖ gas contamination of the atmosphere,
- ❖ abnormalities about the lease and equipment.

If operating conditions appear normal:

- ❖ Enter the lease. Turn vehicle around to face the lease exit.
- ❖ Slowly open and lock open both doors to the building, downwind door first.
- ❖ Allow building to ventilate.
- ❖ Proceed with work if conditions inside are safe.

In the event that gas is detected the operator shall:

- ❖ Make radio contact with the Site Supervisor telling him of the situation and requesting backup assistance.
- ❖ Not enter without the use of breathing apparatus and a standby person.

Maintenance Personnel

- ❖ Maintenance personnel shall adhere to lease entry and conduct procedures.
- ❖ All maintenance work on sour operating leases shall involve two or more workers.
- ❖ Only operating personnel shall shut in and start up wells and equipment for purposes of maintenance.
- ❖ When maintenance work requires that both members of the crew wear breathing apparatus, a third worker shall be called in to act as safety watch.
- ❖ Contract personnel working on or near lease equipment must be equipped with their own breathing apparatus and be qualified in its use. They will be accompanied by a safety watch with breathing apparatus and a radio or telephone-equipped vehicle. The safety watch is not required when the well is shut in by locked master valves and all sour gas lines on the lease are de-pressured and purged. In this case only periodic surveillance is necessary.
- ❖ Contract personnel working on an H₂S producing lease, but not on or near lease equipment shall:
 - Not enter a lease without being accompanied by a Site Supervisor, Foreman or operator.
 - Be familiar with field safety regulations and have a good understanding of H₂S and its dangers.
 - Leave the lease immediately if they notice anything unusual about the lease or equipment, and report the situation to a Site Supervisor.

When the lease has been proven safe, the Site Supervisor may leave but must maintain periodic surveillance of the operation throughout the day.

Fittings and pipe used in repairs or modifications shall conform to original construction specifications with respect to working pressures and material.

Technical Personnel

Technical personnel shall not enter a producing sour lease unless:

- ❖ The well has been shut in by master valve and lines de-pressured by the operators or,
- ❖ They are accompanied by operations personnel, or
- ❖ They adhere to the procedures regarding lease entry, or
- ❖ There is respiratory and H₂S detection equipment on lease, and
- ❖ They are trained to use the respiratory and detection equipment.

The engineer or technologist is responsible to ensure that contract workers adhere to the rules laid down in:

- ❖ this guide,
- ❖ General Safety Regulations for Contractors,
- ❖ Occupational Health and Safety Act and Regulations.

Communications

In order to contact outside help in an emergency, each facility operator or designated Site Supervisor will have a means of communicating with other off-site personnel or emergency services.

When a facility operator or designated Site Supervisor is not present at a worksite, the contractor will have a radio or telephone capable of communication with off-site personnel or emergency services. All on-site personnel will be informed of the location of the radio or telephone.

Company and site-specific emergency services telephone numbers and clear directions to the location will be posted near all telephones, or provided to each contractor representative and designated Site Supervisor.

Handling and Transport of Sour Bulk Product

Vero Energy Inc. personnel shall, at regular intervals, confirm that:

- ❖ Waybills and TDG placarding requirements are observed.
- ❖ While loading, a bonding cable is connected between the load line and the truck tank.
- ❖ Driver's use breathing apparatus if the H₂S level exceeds 10 ppm.
- ❖ Tank trucks are equipped with positive air shutoffs.
- ❖ Truck drivers wear appropriate personal protective equipment and clothing.
- ❖ Drivers remain near their trucks while loading or unloading.
- ❖ Drivers do not perform any vehicle maintenance while loading or unloading product.

Emergency Rescue Procedures

When attempting rescues in H₂S areas, use breathing apparatus. Workers should make use of all rescue equipment on location: safety harnesses, ropes, slings, stretchers, cranes. At least two people should perform a rescue. It is much safer for the rescuer, and in most cases, two people can get a victim to safety quicker than one. Rescuers must take precautions against falling or dropping victims.

When performing a rescue, workers shall:

- ❖ Get out of the hazard area.
- ❖ Call for assistance.
- ❖ Put on breathing apparatus.
- ❖ Check windsocks and streamers to determine where you will take the victim.
- ❖ Remove the victim to a pre-determined (upwind) safe area.

Treatment for H₂S Poisoning

- ❖ Begin artificial respiration as soon as you reach a safe area. If a resuscitator is available, direct another worker get it and prepare it for use.
- ❖ Treat for shock; keep victim warm and comfortable.
- ❖ Keep the victim at rest.
- ❖ Get the victim to medical aid. Victims of poisoning should always be treated by a physician. The effects of H₂S may not be apparent for many hours.

5.4.6 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS legislation was initially designed to provide all workers with information on the chemicals and substances they handle and may be exposed to. There are three main requirements for WHMIS compliance:

Training

All persons working at a worksite where chemicals or controlled substances are being handled must be provided with training on legislative requirements and how the company meets these requirements.

Labelling

All containers of hazardous controlled products must be labelled, either with a supplier's label (where the product is still in the original shipping container) or a workplace label (where product has been decanted into another container).

Labels are to identify the product by name, hazard classification (i.e. corrosive, toxic, flammable, poisonous, reactive, compressed, etc.) and the required protective equipment for safe handling.

Whenever any product is put into another container, ensure a WHMIS tag or label is affixed to the container.

Labelling may take the form of colour coding of pipes and vessels. A chart indicating WHMIS requirements will also be posted. Even if colour coding is provided, sample points or areas where workers are in contact with the controlled product shall be labelled.

Material Safety Data Sheets (MSDS)

MSDS provide detailed information specific to the product being handled. Information in the MSDS for a product includes physical, chemical, toxicological and flammability information. The MSDS also includes emergency response procedures, required safe handling techniques and manufacturer information.

MSDS specific to all the products at the worksite must be made available to all workers and information must be kept current (within three years).

Operations personnel are responsible for ensuring that their MSDS information is available at worksites and is complete.

As part of routine pre-job planning and safety, MSDS should be reviewed.

5.4.7 TRANSPORTATION OF DANGEROUS GOODS (TDG)

The purpose of TDG legislation is to ensure all people who may be exposed to, or who must respond to, an emergency are provided with information about the safe handling of hazardous products in transit. There are also three main requirements for TDG legislative compliance.

Placarding

All controlled and designated product loads must be placarded on all four sides of the vehicle. These placards identify the product's characteristics (i.e. flammable, compressed, poisonous, etc.).

Manifesting

Information indicating the product, shipper, receiver and carrier of the product must accompany the product, with the driver, for each load carried.

Training

All carriers of these products are required to be certified in the requirements and the fulfillment of the legislation.

All operations personnel and contractors expected to carry dangerous goods on behalf of Vero Energy Inc. are to be TDG trained. Management and field supervisors are to ensure compliance with this standard.

Exemption Permits

Members of the Small Explorers and Producers Association of Canada are exempt from specific requirements of Transportation of Dangerous Goods (TDG) legislation when the applicable exemption permit is carried with the dangerous goods in transport as follows:

Permits exempt the carrier from the requirement to placard and the requirement to manifest, except as indicated below. (Parts IV and V of the TDG Regulations).

The load of dangerous goods cannot exceed 500 kg. in weight. If carried by a bulk carrier, volume of production fluids can exceed 500 kg.

A copy of the permit must accompany the load.

Contract companies transporting product, samples, etc. for Titan Exploration only may use permits.

Copies of individual specific permits are available with the operators. Each permit specifies conditions that should be reviewed before they are used.

5.4.8 LOCKOUT PROCEDURES

Responsibility

The applicable operator shall lock out and tag all normally energized equipment before work is performed on it or before a worker may be exposed to a hazard created by the equipment. Any subsequent worker shall lock out and tag the equipment before working on it.

Practice

Only keyed locks shall be used for lockout.

The appropriate operator will install his or her lock on the equipment breaker with a multiple lockout device and a "Do Not Operate" tag. The operator's name, the current date and the reason for installing the lock shall be recorded on the tag.

The operator shall then try to start the piece of equipment.

Each maintenance worker who works on the piece of equipment shall install his or her own lock on the breaker before starting work on that piece of equipment and shall remove it whenever the work is complete or when he or she is not working on the equipment.

The only person who should remove the original lock is the person who installed it. If that person is not available to remove the lock, the area foreman shall be consulted before the lock is removed.

5.4.9 EQUIPMENT ISOLATION

Responsibility

Operations personnel are responsible for the positive isolation of process equipment that normally contains hazardous materials before any work is performed on that equipment.

Positive Isolation Means:

- ❖ Blinding, Plugging or Blanking
- ❖ Double blocking valves with bleed valve open between the block valves

Practice

- ❖ Positive isolation shall be made as close as possible to the affected equipment.
- ❖ All blind or isolation locations shall be flagged or tagged to indicate a blind is in place.
- ❖ When the double block and bleed method is used, isolation valves must be locked in the closed position and the bleed valve shall be locked in the open position.
- ❖ Consider thermal expansion between isolations in piping.
- ❖ Protection should be provided to prevent over pressuring.
- ❖ Blind locations should be identified on the safe work permit.
- ❖ Only management, as per the Occupational Health and Safety Act, may grant deviation, in writing, to this standard.

5.4.10 MATERIAL HANDLING

If the object is too heavy or bulky, get help before attempting to lift it.

Take advantage of lifting equipment such as hoists, dollies, and handcars.

When lifting, ensure good footing and a good grip on the object. Keep your back straight and lift with your leg muscles. Avoid twisting or turning with the load. This may cause the weight to be transferred to one leg or hip joint, which can lead to injury. Know and be familiar with material being handled. (See “WHMIS”)

5.4.11 ELECTRICAL SAFETY & STATIC HAZARDS

Electrical Equipment

All electrical equipment on an oil and gas lease can be a potential source of ignition; Any electrical equipment, regardless if it is battery operated or otherwise, must not be used on a lease unless approved by the lead operator and a gas test is performed. Exceptions to this rule are flashlights or instruments that have an intrinsic safety or explosion proof rating on them (a label affixed to the piece of equipment will indicate the appropriate CSA approval, i.e. Class 1, Div. 11); Normal extension cords or electrical equipment should not be used in process areas. All electrical equipment should be inspected to ensure it is in proper working order and condition before use. Check to ensure that insulated housings on portable power tools are not cracked and that cords are not frayed or pulled out; and
Only qualified electricians are to service or maintain electrical equipment.

Safe Clearances

Although most vehicles are not high enough to contact live overhead power lines, if the line is of a high enough voltage electrical current can arc to the vehicle. The following are the required safe distances in any direction to be maintained from power lines:

2 metres	Up to 5,000 volts
3 metres	Between 5,000 and 50,000 volts
4.5 metres	Between 50,000 and 250,000 volts

Where these safe distances cannot be maintained, the lead operator shall ensure the local power company is informed and is at the jobsite before work commences.

If power lines do make contact with a vehicle, the tires will act as an insulator. Do not attempt to get out of the vehicle as contact with both the truck and the ground will provide a path for the electrical current. If egress from the vehicle is necessary, jump clear of the vehicle.

Static Charge Dissipation

Liquids being transferred or dispensed carry small pieces of solid, electrically conductive material. These particles will become electrically charged and may release this charge to a ground source, such as the inside of a truck tank or a small container causing an arc or a spark. If a flammable mixture is in the container, this spark may cause a fire or explosion.

Metallic braid hoses will not always serve as the bond between a truck tank and a production tank or vessel because:

- ❖ There is no guarantee that the braid in the hose is making the proper bond; and
- ❖ The electrical current often travels around the outside of the hose (depending on the product and its speed through the hose), and will not allow the current to travel against the flow in the hose, thus allowing the charge to dissipate.

Whenever flammable liquids are transferred from one container to another, always ensure they are bonded to each other and grounded. Ensure that the containers are made of a conductive material such as metal to allow the static charge to dissipate.

Other operations where static electricity dissipation should be considered include steam cleaning, sand blasting, moving belts and handling of powders or dusts.

5.4.12 SAFE USE OF LADDERS

Like any other piece of equipment, check to ensure a ladder has been maintained in a safe condition before using it. Check for broken or bent rungs and rails and ensure proper non-slip feet are in place.

The following precautions should be taken when using ladders:

- ❖ Always fully extend a step ladder. Do not lean it against something;
- ❖ Do not work from the top step of a step ladder or the top three rungs of an extension ladder;
- ❖ Extension ladders should be placed one metre away from the vertical for every four metres in height;
- ❖ An extension ladder should extend at least one metre above a platform if it is to be used to access the platform;
- ❖ An extension ladder should always be secured at the bottom and tied off at the top. If possible, have someone hold the bottom of the ladder until it is secured;
- ❖ Ladders should never be painted as this could hide cracks or other damage;
- ❖ Do not carry tools up and down ladders. Use a canvas sack and rope to lift tools instead;
- ❖ Always face the ladder when ascending and descending; and
- ❖ Do not reach from side to side. Move the ladder to the location where it is required.

5.4.13 VEHICLE OPERATIONS

Workers and Contractors shall be responsible for:

- ❖ Observing posted speed limits,
- ❖ His or her own driving performance,
- ❖ Not using cell phone, including mounted version, while driving. If a call is received, pull off the road when safe to do so and stop to make out going calls. Cell phone use is prohibited on lease sites.
- ❖ Utilizing safe, defensive driving practices at all times,
- ❖ Complying to the Traffic Safety Act,
- ❖ Reducing speed if road or weather conditions warrant it,
- ❖ Maintaining a valid provincial drivers licence for the class and type of vehicle they are assigned to operate,
- ❖ Not operating a company vehicle while under the influence of illicit drugs and/or alcohol,
- ❖ Not operating a vehicle while using prescribed medication or over-the-counter medication that will impair driving ability,
- ❖ Passing vehicles only when absolutely necessary,

- ❖ Conducting a vehicle walk around check prior to backing up,
- ❖ Reporting automotive accidents immediately to the Vero Energy Inc. Site Representative and complete an Accident/Incident Report Form immediately,
- ❖ Planning journeys to minimize travelling distances, and thus exposures to driving hazards,
- ❖ Taking rest breaks while driving for extended periods of time,
- ❖ Routine vehicle maintenance and cleaning,
- ❖ Wearing seatbelts and driving with headlights on at all times, and
- ❖ Ensuring that all loose equipment is properly secured to prevent movement in the case of sudden maneuver or braking.

General

All company vehicles, or those operated on the company's behalf, shall be equipped with at least a 10 lb. BC rated dry chemical extinguisher, a first aid kit, flares, a tow strap, booster cables and, in remote areas (more than 50 km. from populated areas), a survival kit.

Towing

- ❖ Ensure that chain or rope is attached to a secure part of the frame and not to steering components, the bumper or other exterior fixture;
- ❖ Do not use combination rope or strap and chain. If the rope or strap breaks, the tension in the rope can act as a sling-shot for the chain end;
- ❖ Always ensure the ends of the towing line are well attached, not just loosely hooked;
- ❖ Avoid jerking the vehicle as this puts extreme strain on the vehicle and the towing line; and
- ❖ Do not place yourself in the line of tension or line of fire of the towing line as, should the towing line break or become detached, you may be struck.

5.4.14 SAFE-WORK PERMITS

Application

Safe work permits are intended to be a checklist for both the operator (issuer) and the maintenance person (receiver) and are designed to:

- ❖ Identify potential hazards;
- ❖ Ensure the required steps are taken to prepare equipment for maintenance activities; and
- ❖ Ensure all required safety precautions are taken before a job starts.

Requirement

Permits should be issued when **non-routine** maintenance work is to be performed that may create a **hazard** to workers. Permits are not required for routine operation related work or work performed by operators. A safe work permit can be found in the Appendices of this manual.

Responsibilities

Issuer

- ❖ Prepare process equipment for maintenance;
- ❖ Eliminate or control any known hazards;
- ❖ Identify required safe work procedures and special personal protective equipment;
- ❖ Review the permit and scope of work with the permit receiver; and
- ❖ Periodically visit the worksite to ensure the job conditions and scope of work have not changed.

Receiver

- ❖ Review the scope of work, permit conditions, safe work procedures and precautions with the other workers performing the job;
- ❖ Ensure all workers abide by the conditions and procedures stated on the permit;
- ❖ Ensure only the work identified on the permit is performed in the specified locations;
- ❖ Evaluate the adequacy and supply of specified safety equipment;
- ❖ Post the permit in a conspicuous location at the worksite;
- ❖ Stop the work immediately if the conditions of the job become hazardous and inform the permit issuer;
- ❖ Ensure the jobsite is cleaned up after the work is complete, sign off and return the permit to the issuer.

Permit Types

Cold Work - when non-routine work involves the opening of process equipment where there will be no ignition source present.

Hot Work - when work requires the use of any ignition source within a process area and/or where an explosive air/gas mixture may be present. This permit is completed to ensure that a gas test is performed before the ignition source is introduced into the area.

Confined Space - see Confined Space Entry Procedure (Section 5.4).

Permit Life

A safe work permit is not valid for more than one normal work shift (maximum 12 hours). If the work is not complete at the end of that shift and has to be continued, the permit can be extended for another 12-hour period. Renewal of the permit requires all conditions be reviewed and gas tests performed again and recorded. Under no circumstance will confined space entry permits extend beyond the initial time period. If the work is finished for the day, the permit should be returned to the issuer and signed off. The job's status shall be indicated on the permit.

Permit Distribution

When the permit has been completed and reviewed by both the issuer and the receiver, the original stays in the book with the issuer and the copy stays with the receiver at the jobsite. The receiver's copy is to be signed off and returned to the issuer when the job is completed or at the end of the shift. The original is to be kept on file for 2 years at the applicable field office.

Gas Testing

Gas tests must be performed whenever a hot work or confined space entry permit is issued. For hot work, a flammable gas test is required. Oxygen, flammable gas and H₂S (if applicable) must be checked prior to confined space entry on each day permits are issued. The scope of the job will dictate how often gas tests should be re-done or the need for continuous monitoring. The general rule is to re-test every two hours. The initial gas test shall be recorded on the front of the permit before it is issued with subsequent tests being recorded on the back of the permit.

Allowable Gas Limits

Flammable Gas	<ul style="list-style-type: none"> - 0% LEL hot work - 20% LEL cold work
Oxygen	<ul style="list-style-type: none"> - 19.5% by volume minimum - 23% by volume maximum - Detectors are usually calibrated to 20.9% by volume
Hydrogen Sulphide	<ul style="list-style-type: none"> - Occupational Exposure Limit (OEL) is 10 ppm based on an 8 hour exposure - 15 ppm for 15 minutes short term exposure limit (STEL) - 20 ppm is the maximum for any period of time
Toxic (Other)	<ul style="list-style-type: none"> - Consult the MSDS to determine the appropriate OEL

NOTE: No person shall work in an atmosphere that:

- ❖ Has a toxic atmosphere above the occupational exposure limit without wearing the appropriate breathing apparatus; or
- ❖ Is explosive or flammable.

General Rules

Permits shall be issued specific to:

- The type of work being performed;
- The location(s) and equipment to be worked on; and
- The time and date of issue.

Similar jobs to be conducted on the same day in different locations within the issuer's area of responsibility can be covered on the same permit provided the description of work and all locations are identified on the permit.

- ❖ Identify the type of work to be performed. If the work involves both hot work and confined space entry, check off both areas.
- ❖ All permits will be prepared completely free of misunderstanding in meaning and intent. The issuer and receiver will review the scope of work and permit conditions together.
- ❖ Provide workers with applicable MSDS information for the products they may be exposed to during the course of work.

5.4.15 PUBLIC CONCERN PROCEDURES

The general public or area residents may express concerns or report incidents regarding company activities. Examples of these may include vehicle accidents, spills or leaks from equipment and other petroleum industry inquiries. It is important that all public concerns communicated to the company be investigated and acted upon without delay.

If the general public or an area resident reports an incident or expresses a concern, the following initial actions should be taken:

Obtain as much information as possible:

- ❖ Reporter's name, address, telephone number
- ❖ Reporter's present location and telephone number
- ❖ Location and nature of the problem
- ❖ Name of organization or party responsible
- ❖ Extent of injuries or damage.

Provide the reporter with the following information

- ❖ Inform of any immediate danger to self or others
- ❖ Assure that immediate action shall be taken to investigate and contain the problem
- ❖ Notify management and request assistance as required.
- ❖ Investigate the problem and implement emergency procedures if the situation warrants.
- ❖ Once the problem has been investigated and the situation controlled, inform the initial reporter of the actions taken to remedy the situation.

5.4.16 SERIOUS INJURY OR FATALITY PROCEDURES

If a serious injury or fatality occurs, the following actions shall be taken:

- ❖ Remove the victim from further harm and provide first aid.
- ❖ Request local medical services (ambulance and hospital).
- ❖ Notify Management.
- ❖ Notify the EUB of all serious injuries and fatalities that have occurred at petroleum facilities.
- ❖ Notify the local police or RCMP.
- ❖ Notify WH&S, of all serious injuries and fatalities, or of any events that have the potential to cause serious injuries.
- ❖ Notify WCB of all fatalities and serious injuries or injuries that disable or are likely to disable the worker for more than the day of the accident.

- ❖ Preserve the scene of the emergency until approval to resume normal operations has been received from head office and the appropriate government agencies.

5.4.17 INCIDENT/ACCIDENT PROCEDURES

Company policy requires that all occurrences that cause or create the potential for serious injury, loss of life, loss or damage to company property or harm to the environment be verbally reported to your supervisor as soon as possible.

It shall be the responsibility of the individual reporting the event to record all pertinent information. The company president shall ensure that the appropriate government agencies are notified.

Company and government agencies may wish to investigate incidents/accidents involving serious injuries, fatalities, losses or damage to company property, or situations that have or could have an impact on the environment.

The senior company/contract representative on site shall ensure that all evidence is preserved in its original state and, if possible, take photographs of the emergency scene.

All incidents/accidents that result in serious injury, property or equipment damage, product loss, damage to the environment or any near-miss accident that could have resulted in any of the above, no matter how minor, must be promptly reported to management. All necessary steps must be taken to reduce or eliminate the hazard including restricting access to the area by placing barricades and warning devices to keep others away from the hazard.

The primary aim of this responsibility is not to place blame, but to allow for a thorough investigation that may prevent a similar incident from occurring.

Incident/Accident Report Forms are to be completed and discussions must take place during regularly scheduled safety meetings to ensure preventive actions have been implemented. All injuries shall be promptly reported to supervisory personnel and shall receive treatment from on-site medical personnel. The prompt treatment of all injuries is required to protect the individual and help avoid further complications.

5.4.18 NATURAL DISASTERS

Wildfires

Fire Notice

A Fire Notice is for information only and is an advisory that a wildfire is currently burning in your area and presents a risk to your life and property. Know the three stages of evacuation: *Alert, Order, All Clear* and monitor news sources for evacuation messages.

Wildfire Evacuation Alert and Evacuation

If field personnel are at a site and a Wild Fire Evacuation is given, Vero Energy Inc. employees will follow the client's evacuation plan (designated site representative or manager).

Evacuation Order

An Evacuation Order is issued by authorities having jurisdiction in response to imminent forest fire danger to the involved area.

These orders are issued in the interest of life and safety. Members of the RCMP, Alberta Environment, local Fire Departments and Emergency Support Services will be involved in expediting that action through door-to-door contact if time permits, or via the media.

When an Evacuation is Ordered:

- ❖ You must leave the area immediately. It is imperative that you report to the Evacuation Centre indicated. This will allow for effective communications for the evacuation team and will facilitate contact by friends or relatives who may be very concerned.
- ❖ If you need transportation to evacuate, advise the individual providing the notice of evacuation.
- ❖ Close all doors and windows in the facility. Leave gates unlocked and clear driveways for fire fighter access.
- ❖ Keep a flashlight and portable radio with you at all times.
- ❖ Follow your emergency escape plan and obey traffic control. Travel will be only one-way out of your area to allow emergency vehicles access. Re-admittance is not permitted.

Returning to Work

You will be allowed to return to the facility when the danger has passed. However, there is a possibility that the fire danger may recur. Continue to monitor news sources.

Evacuations can be chaotic. Fire fighters cannot seriously get to work on the fire problem until life safety issues are under control. People who resist evacuation consume fire fighter's precious time. Once you realize you need to leave, don't waste time and evacuate immediately. Delay can result in roadways being blocked by blinding smoke or fire equipment. You cannot save your fellow employees and possessions if you can't get out. Listen to emergency broadcasts and follow the directions of emergency personnel.

The most important thing you can do is keep calm and be aware that an approaching fire usually will:

- ❖ Follow the direction of the wind.
- ❖ Travel faster up slopes (i.e. rate of spread doubles for every 20% increase in slope).
- ❖ Gain great speed while following uphill canyons, which create natural chimneys.
- ❖ Gain great speed when burning through grass and light brush.
- ❖ Slow down, but gain in intensity when burning through brush or trees.
- ❖ Once large enough, it can generate its own winds.
- ❖ Throw burning debris ahead of the main fire front, potentially encircling those who are in front of it.

By staying organized, monitoring a threatening situation and taking action in a timely manner you should be able to protect yourself and your loved ones. You will also not distract fire personnel who are trying to protect lives, homes and property.

Blizzards And High Winds

During storms with heavy snowfall and/or high winds the following actions are to be taken:

- ❖ Monitor the rate of snowfall and wind chill chart to determine if conditions permit continuation of operations. Wind chill is a combination of ambient temperature and wind speed that provides an indication of the effects of current conditions on the body.
- ❖ Assemble in a heated enclosure to wait out the storm.
- ❖ Conduct a head count to ensure that all personnel are accounted for.
- ❖ If a worker is missing in poor visibility conditions, a search party must be organized and sent out only when visibility improves to allow a search to proceed safely. Notify local police or search and rescue organizations for assistance.
- ❖ Secure all materials or objects that may be dislodged in high winds.
- ❖ Where conditions permit continuation of operations, considerations must also be made for regular breaks to warm-up.
- ❖ Properly insulated clothing including boots, gloves/mitts, and parkas are necessary personal protective equipment (PPE) in winter conditions. All exposed areas have to be covered.
- ❖ Adopt the “buddy” system where personnel frequently check each other for frostbite and signs of hypothermia.
- ❖ Administer first aid for any frostbite or hypothermia and summon medical services if required.
- ❖ If a serious injury or fatality has occurred, contact relevant company and government agencies.
- ❖ If driving a vehicle in a blizzard, pull off the road safely with four-way flashers on and wait out the storm.

Severe Lightning Storms

In the event of a severe lightning storm, the following actions are to be taken:

- ❖ All field personnel will stop all outdoor work immediately.
- ❖ Shut down all operating equipment and evacuate to a secure building as soon as possible.
- ❖ Avoid the tops of buildings, overhead power lines, metal equipment and vessels.
- ❖ Avoid lakes, sloughs or any open body of water.
- ❖ If caught out in the open with no shelter close by, crouch down in a stooping position. Do not take shelter under a tree.
- ❖ If driving a vehicle, pull off the road safely and wait in the vehicle with four-way flashers on until the storm has passed.
- ❖ If a serious injury or fatality has occurred, contact relevant company and government agencies.

Flooding

Home and property flooding can occur anywhere in Canada. Being prepared for a flood can reduce potential harmful effects to your family and property.

Flood Warning Action

- ❖ Store fresh drinking water. Regular drinking water supply may become contaminated.
- ❖ Install plugs in drains of low-lying areas and check any sewer backup valves.
- ❖ Remove all chemical products from flood prone areas.
- ❖ Move important documents and equipment to higher ground if possible.
- ❖ Install sump pumps if available.
- ❖ Consult local municipal authorities before dyking buildings.
- ❖ Assemble and account for all personnel.
- ❖ Contact your supervisor and/or management.

During Flooding

- ❖ Turn off any furnaces and outside gas valves that may be in danger of being submerged.
- ❖ Turn off electrical power. If the area surrounding the switch is wet, stand on a dry surface and reach with a dry wooden stick.
- ❖ Add 2½ litres of disinfectant (i.e. chlorine bleach) to basement floodwaters every two or three days if applicable.
- ❖ If you suspect your drinking water is contaminated, purify it by boiling, using purification tablets or chlorinate with chlorine bleach.
- ❖ Listen for flood instructions on a battery-powered radio.
- ❖ Never attempt to cross flood areas on foot or in a vehicle. The water can be swift and you could be swept away.

Although flooding is not a frequent problem, it does happen. Follow instructions of local officials and emergency support personnel.

Evacuation

If you must evacuate remember to take:

- ❖ A flashlight, battery-powered radio and extra batteries.
- ❖ Waterproof outerwear and footwear.
- ❖ Extra clothing.
- ❖ Essential medicines and toiletries.
- ❖ Personal documents and family identification.
- ❖ Copies of important documents and files.

Tornadoes

In Building: Stay inside with doors and windows shut. Stay away from windows, doors, and exterior walls. Go to small, interior room or stairwell on lowest floor of building (bathroom are often best choice). If possible, crouch under heavy furniture. Protect your head with cushion or mattress.

Outside: Seek shelter in building (not car or mobile home) immediately. If no shelter is available, lie flat in a low dry spot (ravine or ditch) or under a low bridge. Keep alert for flash floods. Protect your head. As a last resort, hang on tightly to the base of a shrub or small tree.

In Vehicle:

Do not stay in vehicle or mobile home and do not try to outrun a tornado by driving, especially in populated areas. If possible, run to a nearby solid structure (shelter or building). If no solid structure is nearby, lie flat in dry ditch or ravine outside. Keep alert for flash floods. Protect your head.

Winter Survival

- ❖ Stay in your vehicle. Trying to dig your way out of a ditch or attempting to walk back to town can be fatal. Do not leave your vehicle.
- ❖ Call 911 to let them know your location and predicament.
- ❖ Do not leave the engine running. If it is extremely cold, idle your engine for a few minutes at a time – but only after ensuring the exhaust system is not damaged and the tail pipe is clear of snow and debris. Carbon monoxide can sneak up on you without warning.
- ❖ Put on layers of warm clothing and wrap yourself in a blanket or sleeping bag.
- ❖ Ventilate the car by opening a downwind window (the side away from the wind and blowing snow (approximately ½ inch).
- ❖ Use your water sparingly (you should keep 2 large bottles in your kit), but do not let yourself get dehydrated.

5.5 MONITORING

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

Management will be held responsible for ensuring that rules, procedures and codes of practice are in place and that all employees and contractors are following them. Those involved in carrying out the procedures will be monitored to ensure they are following the required practices on a regular basis as a part of regular inspections and audits.

5.6 REVIEW/FOLLOW-UP

When will we review this component for continuous improvement?

To determine the effectiveness of the rules, procedures and codes of practice described in this section, the company will conduct an annual review of the documents. Any changes to legislation, industry practices or company requirements will trigger a review and update of the appropriate rules, procedures and codes of practice.