CONFINED SPACE PROCEDURE

The purpose of this procedure is to ensure that the hazards of performing work within a Confined Space are communicated and training is provided to all employees in order to effectively control the hazards.

This procedure also provides all necessary information to effectively implement the Confined Space Management Program.

SCOPE

This procedure applies to all defined confined spaces.

DEFINITIONS

**Atmospheric Hazards** – include the following:

1. The accumulation of flammable, combustible or explosive agents;

An oxygen content in the atmosphere that is less than 19.5 per cent or more than 23 per cent by volume; or,

1. The accumulation of atmospheric contaminants, including gases, vapours, fumes, dusts or mists that could,
2. Result in acute health effects that pose an immediate threat to life; or,
3. Interfere with a person’s ability to escape unaided from a confined space.

**Confined Space** – A fully or partially enclosed space:

1. That is not both designed and constructed for continuous human occupancy; and,
2. In which atmospheric hazards may occur because of construction, location or contents or because of work that is done in it.

**Purging** – Displacing contaminants from a confined space.

STANDARDS / PROCEDURES

**GENERAL**

**Hazard Assessment:**

* Before each time a worker enters a confined space, a competent worker must perform a written *Confined Space Assessment*; and,
* The Assessment must include the following:
* The hazards that may exist in the confined space;
* The hazards that may develop while the work is being performed inside the confined space;
* General safety hazards in the confined space;
* The employer shall ensure that the assessment is reviewed as often as is necessary to ensure that the relevant plan remains adequate;
* Every confined space must be thoroughly assessed and evaluated by a competent worker to determine whether it is possible to eliminate the atmospheric hazard completely; and,
* Even if a space is not defined as a confined space under the regulations, supervision must take every precaution reasonable in the circumstances to protect workers entering the space.

**CONTROLLING THE HAZARDS**

Once the hazards have been identified in the assessment, a competent person must develop a plan to

eliminate or control the hazards. The plan must include these mandatory regulated requirements:

* Duties of workers;
* Coordination (Where required and prepared by the constructor);
* Rescue Procedures;
* Rescue Equipment (inspected by a competent person and methods of communication);
* Protective Clothing and Personal Protective Equipment;
* Isolation of energy and control of material movement;
* Attendants;
* Adequate means of access and egress;
* Atmospheric testing (performed by a competent person);
* Ventilation and purging; and,
* Adequate procedures for working in the presence of explosive or flammable substances.

**Duties of Workers:**

* Do not enter or re-enter (if the confined space has been left unoccupied and unattended) the confined space unless testing has been performed;
* Know the hazards that may be faced upon entry. Know the route of exposure, signs and symptoms and long-term effects of exposure;
* Know how to use the equipment properly (tools and PPE); and,
* Maintain communication with the attendant so that the attendant can monitor your safety and be able to alert workers to evacuate the confined space.

**Alert the Attendant whenever:**

* You recognize any warning sign or symptom of exposure;
* You see a dangerous condition; and,
* An alarm is activated.

**Get out of the Permit space immediately whenever:**

* A warning system indicating a ventilation failure is activated;
* The attendant gives an evacuation order;
* A worker recognizes any signs or symptoms of exposure;
* A person inside detects a dangerous condition; and,
* An evacuation alarm is activated.

**Coordination:**

* When workers of more than one employer perform work in the same confined space, the constructor must coordinate entry operations; and,
* The constructor must prepare a coordination document to ensure that the various employers perform their duties in a way that protects the health and safety of all workers entering the confined space.

**Rescue Procedures:**

The confined space rescue plan must include written procedures for safe on-site rescue that can be implemented immediately in case of an emergency. An adequate number of people must be available to carry out the rescue procedures immediately.

These people must be trained in;

* The on-site rescue procedures;
* First aid and Cardio Pulmonary Resuscitation (CPR); and,
* How to use the rescue equipment necessary to carry out the rescue.

**Rescue Equipment:**

* The rescue equipment must be readily available, appropriate for the confined space and inspected by a competent worker;
* The competent worker must keep a written record of the inspection(s); and,
* The size of the confined space opening must be considered when choosing the rescue equipment (Do not plan for a SCBA when it will not fit through the opening of the confined space).

**Protective Clothing and Personal Protective Equipment:**

* A Competent person should assess the protective equipment and clothing required to perform the work. (i.e. gloves, boots, chemical suits, fire resistant coveralls, hearing, eye and face and
* respiratory protection); and,
* All workers shall be trained in the selection, care and use of all necessary PPE.

**Isolation of Energy and Control of Material Movement:**

Equipment that moves in any way (even rotation) must be isolated by:

* Disconnecting the equipment from its power source and de-energizing the equipment and follow lockout procedures;
* Only trained, competent employees shall perform lockout operations;
* Pay special attention to procedures when performing live electrical work within a confined space, see Live Electrical Work operation procedure for further information; and,
* Gloves, mats and other insulating equipment may be required depending on the type of work. Capacitors or other components which can store a charge should be discharged or grounded.

**Attendant:**

An attendant must be present whenever a worker enters a confined space. The attendant is not allowed to enter the confined space, unless he / she is replaced by another attendant in accordance with the plan.

The attendant must:

* Remain alert outside and near to the entrance;
* Be in constant communication (visual and speech) with all workers in a confined space. Radio checks shall be performed hourly as a minimum requirement;
* Monitor the safety of workers inside the confined space;
* Provide assistance as necessary;
* Be provided with a device for summoning help in case of an emergency; and,
* Initiate an adequate rescue procedure in case of an emergency.

**Entry and Exit (Access and Egress):**

* The means of entry and exit can be evaluated before entry by checking drawings, prior knowledge, or inspection from outside the space.
* Confined space entrances are generally small and not well located, these small openings must be considered in the rescue plan since they restrict the movement of workers and equipment in and out of the confined space.

**Atmospheric Testing:**

* If the hazard assessment determines that there is an atmospheric hazard in the confined space, atmospheric testing must be performed;
* Only a trained, competent person shall conduct atmospheric testing safely and before and during the time a worker is in a confined space to ensure that acceptable levels are maintained;
* The person performing the tests shall be trained and familiar with all atmospheric testing equipment including, calibration, maintenance and operation of the equipment;
* If the confined space is left unattended and unoccupied, the tests must be performed again prior to re-entry; and,
* Results of every sample of a test must be recorded on the entry permit. If continuous monitoring is required, test results must be recorded at regular intervals (every hour).

**Combustible, Explosive or Flammable Atmospheres (Hot Work):**

* No worker is allowed to enter as confined space if airborne combustible dust or mist is present in a concentration sufficient for explosion;
* If an explosive or flammable atmosphere is detected, only certain types of work can be performed. The conditions for each type of work are specified below;
* Hot Work-means activities that can produce a source of ignition such as a spark or open flame. (i.e. welding, cutting, grinding and using non-explosion proof electrical equipment);
* Cold Work-means activities that cannot produce a source of ignition;
* Between 0% and 5% of the LEL, hot work can be performed providing the following conditions
* are met;
* The oxygen content must be maintained below 23%;
* The atmosphere must be continually monitored;
* The entry permit must include adequate provisions for Hot Work; it must specify the appropriate measures to be taken;
* An alarm and exit procedure must be in place to provide adequate warning and allow safe escape if the atmospheric concentration exceeds 5% of the LEL or if the oxygen content exceeds 23%;
* Between 0% and 10% of the LEL cold work can be performed; and,
* Between 0% and 25% of the LEL, inspection work can be performed.

**Ventilation / Purging:**

* This is the most effective measure of control, the space can be purged of dangerous atmospheres by blowing enough fresh air, and / or by removing (or suction venting) the bad air
* and allowing clean air in;
* Best results are obtained by blowing fresh air into a space close to the bottom;
* Check the efficiency of the ventilation by re-testing the atmosphere with gas detection equipment before re-entry; and,
* If mechanical ventilation is used to maintain acceptable atmospheric levels, there must be a warning system and exit procedure in case there is a ventilation failure.

**Entry Permits:**

* A competent person must verify that the permit issued complies with the plan before every shift.
* If mechanical ventilation is used to maintain acceptable atmospheric levels, there must be a warning system and exit procedure in case there is a ventilation failure.
* Entry permits should be understood by everyone involved with the job and must be readily available to every person entering the confined space.
* The employer shall ensure that a separate entry permit is issued each time work is to be performed in a confined space, before any worker enters the confined space.

Entry Permits shall include but not be limited to the following:

* The location and description of the confined space;
* A description of the work;
* A description of the hazards and the corresponding controls;
* The time period for which the permit applies;
* The name of the attendant;
* A record of each worker who enters and leaves;
* A list of equipment required for entry and rescue, and verification that the equipment is in good working order;
* Additional procedures and controls if Hot Work is to be performed;
* The Entry Permit may also include;
* A record of the hazard assessment; and,
* The hazard control plan and training records.

**Unauthorized Entry:**

The constructor must ensure that each entrance to the confined space is secured against unauthorized entry and/or has adequate barricades or signs warning against unauthorized entry.

**RESCUE PROCEDURES**

* Ensure that no worker enters or remains in a confined space unless, in accordance with the relevant plan, adequate written on-site rescue procedures that apply to the confined space have been developed and are ready for immediate implementation;
* Before any worker enters the confined space, adequate personnel trained in the matters listed below are available for immediate implementation of the on-site rescue procedures;
* The constructor must ensure that each entrance to the confined space is secured against unauthorized entry and / or has adequate barricades or signs warning against unauthorized entry;
* The use of rescue equipment required in accordance with the relevant plan; and,
* Establish methods of communication that are appropriate for the hazards identified in the relevant assessment and shall make them readily available for workers to communicate with the attendant.

**RESCUE EQUIPMENT**

The rescue equipment to be used will be dependent upon the hazards in the confined space and the relevant plan. Examples of safety equipment include:

* Harnesses and lifelines
* Hoist / retrieval systems
* Self-Contained Breathing Apparatus (SCBA)
* Airline respirators and other equipment as necessary.

It is very important to take into account the size of the confined space access/egress points when selecting the type of rescue equipment to be used.

Ensure that the rescue equipment identified in the relevant plan is:

* Readily available to affect a rescue in confined space;
* Appropriate for entry into the confined space;
* Inspected as often as necessary to ensure it is in good working order, by a competent person and is appointed by the Supervisor;
* The inspection record shall be recorded in writing by a competent person, and the record of the inspection may be incorporated into the entry permit;
* Calling “911” does not satisfy the confined space regulation in an emergency situation, it is not
* considered ready for immediate implementation; and,
* When using radios or other methods of communication, regular checks (on an hourly basis) must be performed on the equipment to ensure it is in good working order.

**ROLES / RESPONSIBILITIES**

**Management:**

* All written rescue procedures and measures are developed and maintained;
* Before a worker enters a confined space, a written procedure is developed, maintained and communicated to all relevant workers;
* A copy of the confined space program and relevant plan(s) is given to the client prior to any entries; and,
* Identify areas where known confined spaces exist with signage and awareness training.

**Supervisor:**

* A written, adequate assessment of the hazards related to the confined space has been carried out by a competent worker prior to entry;
* A written plan, including procedures for the control of hazards identified in the assessment has been implemented by a competent person for that confined space;
* All workers relevant to the confined space have been appropriately trained to perform work within the boundaries of the confined space plan; and,
* Permits are related to the plan and all paperwork is relevant and correct.

**Worker:**

* They work in accordance with the confined space plan, rescue plans and hazard assessment and all other requirements under the company Confined Space Management Program;
* They have received the appropriate training;
* They use all required personal protective equipment; and,
* They report all substandard conditions, actual or potential hazards and / or deviation(s) from this procedure or the Confined Space Management Program immediately to their supervisor.

**COMMUNICATION**

This procedure shall be communicated to all relevant trained personnel through the Confined Space Management Program. It applies only to trained employees.

**TRAINING**

Any worker subject to the scope of this procedure shall ensure that they have participated in a Confined Space Awareness, Entrant and Attendant Training Program prior to beginning any work related to a confined space. Training outlines the hazards and prevention methods associated with confined spaces.

**EVALUATION / REVIEW**

This procedure shall be evaluated on an annual basis for effectiveness and completeness by the Senior

Management.