

# Corporate Policy and Procedure



POLICY	<b>Confined Space Program</b>
CATEGORY	Health and Safety
AUTHORITY	All Departments
RELATED POLICIES	Job Hazard Analysis Lockout Program Hot Work Program Working Alone Policy
APPROVED BY	Executive Team
EFFECTIVE DATE	January 10, 2010
REVISION DATE	April 2, 2019

## Policy Statement

Guided by our corporate values, all applicable departments must follow the Confined Space Program to manage the risks associated with working in or near a confined space. A hazard assessment and entry and rescue plans and an entry permit specific to the work shall be written for every confined space.

## Purpose

The purpose of this program is to:

- Establish corporate requirements for confined space entry;
- Manage all risks associated with working in or near confined spaces
- Provide guidance and tools to assist in compliance with Ontario Regulation 632.

## Scope

This program applies to all worker engaging in confined space entry.

This program does not apply to:

- a) Emergency work performed by,
  - i. A firefighter as defined in the Fire Protection and Prevention Act, 1997; or
  - ii. A person who,
    - Holds a certificate under the Technical Standards and Safety Act, 2000 designating him or her as a gas technician, and
    - Is working under the direction of a fire department, as defined in the Fire Protection and Prevention Act, 1997.

- b) Work performed underwater by a diver during a diving operation, as defined in Ontario Regulation 629/94 (Diving Operations) made under the Act. These workers will be provided with personal protective equipment and training as prescribed by their legislation, guidelines and internal procedures.

## **Definitions**

### **Acceptable atmospheric levels**

- a. The atmospheric concentration of any explosive or flammable gas or vapour is less than:
  - i. 25% of its lower explosive limit if the worker is performing only inspection work that does not produce a source of ignition.
  - ii. 10% of its lower explosive limit if the worker is performing only cold work. The atmospheric concentration of the explosive or flammable gas, vapour or mist is less than 10% of its lower explosive limit.
  - iii. 5% of its lower explosive limit if the worker is performing hot work. It is not practical in the circumstances, for technical reasons, to render the atmosphere inert by adding an inert gas. The exposure to atmospheric contaminants meets current applicable standards.
- b. The oxygen content of the atmosphere is at least 19.5% but not more than 23% by volume
- c. Airborne exposure to toxic contaminants is below the exposure limits described by Regulation 833- Exposure to Chemical and Biological Agents.

### **Adequate**

When used in relation to a procedure, plan, material, device, object or thing, means that it is,

- a. sufficient for both its intended and its actual use, and
- b. sufficient to protect a worker from occupational illness or occupational injury

### **Atmospheric Hazards**

- a. the accumulation of flammable, combustible or explosive agents,
- b. An oxygen content in the atmosphere that is less than 19.5% or more than 23 by volume, or
- c. The accumulation of atmospheric contaminants, including gases, vapours, fumes, dusts or mists, that could
  - i. Result in acute health effects that pose an immediate threat to life, or
  - ii. Interfere with a person's ability to escape unaided from a confined space

### **Cold Work**

Work that is not capable of producing a source of ignition

### **Competent Person**

A person who is:

- a. Qualified because of knowledge, training and experience to organize the work and their performance
- b. Familiar with Occupational Health and Safety Act (OHSA) and the regulations that apply to the work, and

- c. Has knowledge of any potential or actual danger to health and safety in the workplace.

### **Confined Space**

A fully or partially enclosed space,

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

### **Confined Space Entry**

It is considered an entry when any part of the body breaks the plane of the access port to the confined space.

### **Contractor**

Any person or entity contracted or engaged to provide services to the City of Guelph, including outside maintenance and service providers.

### **Emergency Work**

Work performed in connection with an unforeseen event that involves an imminent danger to the life, health or safety of any person.

### **Entry Plan**

A plan for one or more confined spaces in a workplace.

### **Entry Rescue**

This involves having a trained rescuer entering a confined space to assist a worker to exit the confined space or remove a worker from the space.

### **Explosive**

A reactive substance that contains a large amount of potential energy that is released in the form of an explosion, usually accompanied by light, heat, sound, and pressure.

### **Flammable & Combustible**

Both flammable and combustible substances will ignite easily and continue to burn if exposed to an ignition source. Generally speaking, flammable liquids ignite and burn easily at normal working temperatures, while combustible liquids will ignite and burn at higher than average working temperatures.

### **Hazard Assessment**

An assessment of hazards with respect to one or more confined spaces in a workplace

### **Hot Work**

Work that is capable of producing a source of ignition.

## **Explosive Limits**

- **Lower Explosive Limit (LEL):** The lowest concentration (percentage) of a gas/ vapour in air that is capable of producing a fire in the presence of an ignition source.
- **Upper Explosive Limit (UEL):** The highest concentration (percentage) of a gas/ vapour in air capable of producing a fire in the presence of an ignition source.

## **Purging**

Displacing contaminants from a confined space.

## **Related Work**

Work that is performed near a confined space in direct support of work inside the confined space.

## **Rescue**

There are three categories of confined space rescue:

- **Self-Rescue:** The entrant recognizes a critical condition or symptoms of exposure and exits the space on his or her own. Alternatively, someone outside of the space may recognize a hazard and order the entrant(s) to leave the space before they are affected. This is the preferred rescue method.
- **Non-Entry Rescue:** Extracting an entrant without having anyone else enter the confined space (ex: using a winch). Less commonly, rescue tools or equipment are passed to the entrant, which due to the nature of the situation, only they can effectively use.
- **Entry Rescue:** Rescue personnel enter the space to extract the entrant(s). This should be used as a last resort since having more people enter a hazardous area is a considerable risk.

## **Rescue Plan**

A detailed plan for emergency response to an injury or other emergency within the confined space.

## **Supervisor**

A person who has charge of a workplace or authority over a worker.

## **Worker**

Means any of the following, but does not include an inmate of a correctional institution or like institution or facility who participates inside the institution or facility in a work project or rehabilitation program:

1. A person who performs work or supplies services for monetary compensation.
2. A secondary school student who performs work or supplies services for no monetary compensation under a work experience program authorized by the school board that operates the school in which the student is enrolled.

3. A person who performs work or supplies services for no monetary compensation under a program approved by a college of applied arts and technology, university, private career college or other post-secondary institution.
4. Such other persons as may be prescribed who perform work or supply services to an employer for no monetary compensation;

### **Ventilation**

The process of actively or passively exchanging the atmosphere in a confined space.

## **Responsibilities**

### **Executive Team**

- Ensure that a written Confined Space Program is developed, complied with and maintained in accordance with regulations
- Provide adequate resources to implement and maintain this program.

### **Manager**

- Ensure workers working in or near confined spaces successfully complete the required training listed below.
- Ensure a focused audit is conducted annually to verify compliance

### **Supervisor**

- Ensure the requirements of this program are implemented and monitor compliance.
- Ensure all workers required to work in or near confined spaces are trained as described below.
- Assign competent confined space attendants, workers and rescue teams
- Complete the Confined Space Permit
- Conduct a pre-job briefing and review all aspects of the Confined Space Permit with the workers entering the confined space and the confined space attendant.
- Sign the completed Confined Space Permit after reviewing with the workers and making any necessary revisions before any entry.
- Review and revise the Confined Space Permit each time:
  - There is a new work event
  - There are changes to atmospheric conditions,
  - The work to be done changes
  - Any new or potential hazards are identified or introduced.
- Provide clear instructions for completing the expected task(s)
- Complete an inventory of all confined spaces, and update as new spaces are identified.
- Ensure energy sources are locked out/isolated, as required.
- Ensure the space is purged and vented, as required.
- Assign a competent person to conduct air monitoring
- Ensure control measures are in place to manage identified hazards
- The rescue team, required equipment, and first aid provider are readily available.

- Adequate access and egress are provided
- Ensure Health and Safety reviews all Confined Space Permits.
- Maintain training records for all workers.
- Ensure the Confined Space Permits are kept for a minimum of two years
- Complete the Confined Space Coordination Document (Appendix C) as required.

### **Workers**

- Participate in confined space training
- Apply the knowledge when working in confined spaces
- Use or wear personal protective equipment as required
- Follow all prescribed precautions, plans and work instructions
- Check to ensure required controls are in place prior to entry
- Notify the Supervisor of any substandard conditions or changes
- Evacuate the space immediately upon direction

### **Contractors**

- Comply with the provisions of this program and the associated plans
- Report any contravention of this program or associated plan(s)
- Report to the project manager:
  - Hazards or substandard conditions
  - Damaged or inadequate equipment
  - Injuries or near misses associated with the confined space entry
  - Changes to the work, work environment or atmospheric conditions

### **Competent Person**

- Inspect and bump test confined space entry monitoring equipment prior to use and calibrate as require.
- Verify all elements of the confined space entry program and plan have been complied with
- Complete and sign the confined space entry permit
- Ensure atmospheric testing has been completed and documented
- Ensure that no person enters a confined space prior to the completion of all required steps of the plan

### **Confined Space Attendant**

- Review the Confined Space Permit Form (Appendix A) for completeness and ensure it is available at the confined space.
- Verify requirements of the confined space entry plans are implemented
- Verify air quality monitoring is complete and recorded in the Confined Space Permit Form prior to entry and as often thereafter as indicted on the permit.  
**Note:** If additional space is needed use **Appendix B** – Confined Space Entry and Atmospheric Test Log
- Document each worker's entry and exit in the appropriate section of the Confined Space Permit Form
- Maintain visual or verbal communication with the workers at all times.
- Report any issues to the supervisor or their designate.
- Alert workers in the confined space of any emergency
- Initiate immediate emergency procedures as required

- Remain outside the confined space and provide information and assistance to the rescuers as required.

**Note: At no time will the attendant enter the confined space unless authorized by the Supervisor and a replacement assigned!**

### **Health and Safety**

- Audit compliance with the confined space program and entry plans
- Review confined space program and confined space training annually
- Assist in the:
  - Identification of Confined Spaces
  - Completion of Confined Space Permit Forms
  - Development of confined space rescue plans
  - Retention of Confined Space Entry Permits

### **Rescue Team**

- Develop a detailed rescue plan for each confined space to be entered
- Identify equipment needed to conduct the rescue(s)
- Verify equipment needed to conduct the rescue is immediately available
- Inspect and test equipment to ensure equipment is in good working order
- Conduct practice rescue exercises at least every 6 months

## **Procedure**

### **Inventory**

Each department shall develop and maintain an inventory of potential confined spaces. **Note:** All spaces not designed for continuous human occupancy shall be treated as a confined space until the assessment indicates otherwise.

### **Guarding Against Unauthorized Entry**

The access point to confined space shall be secured against unauthorized entry or provided with adequate barricades or adequate warning signs or both. **Note:** In some circumstances, use of signs is not practical, such as for every manhole and grate. A tool is required for removal of the cover, and therefore, it is considered secure against entry.

### **Authorized Workers**

Only workers with current Confined Space Entry training (within last 3 years) are allowed to enter and work in a confined space.

### **Isolation of Energy and Control of Materials Movement**

Hazardous energy which may endanger or harm workers involved with Confined Space Entry must be controlled by every reasonable means including:

- Blanking, disconnecting piping or other adequate means,
- De-energizing and locking out the equipment or other adequate means, and
- Material removal or stabilization to avoid engulfment, entrapment, suffocation and other hazards from free-flowing material.

### **Ventilation and Purging**

If atmospheric hazards exist or are likely to exist in a confined space, the confined space must be ventilated, purged or both, before any worker enters it, to ensure

that acceptable atmospheric levels are maintained in the confined space during work.

- Mechanical ventilation shall be provided if required to maintain acceptable atmospheric levels during the execution of the work.
- Where mechanical ventilation is required, an adequate warning system and egress procedure must also be provided, in the event of a ventilation failure.

### **Flammable Atmospheres**

Flammable or explosive atmospheres may only be entered under the following conditions:

- The worker is performing only inspection work that does not produce a source of ignition and the atmospheric concentration of the explosive or flammable gas, vapour or mist is less than 25% of its lower explosive limit, or
- The worker is performing only cold work and the atmospheric concentration of the explosive or flammable gas, vapour or mist is less than 10% of its lower explosive limit, or
- The worker is performing hot work and for technical reasons it is not possible to render the atmosphere inert by adding an inert gas and all of the following conditions are met:
  - ✓ The atmospheric concentration of the explosive or flammable gas, vapour or mist is less than 5% of its lower explosive limit,
  - ✓ The atmosphere in the confined space does not contain, and is not likely to contain an oxygen content less than 19.5% or greater than 23%,

Where flammable or combustible vapours may be present in the confined space, only spark resistant tools and explosion proof lighting will be used. No lighters, cell phones or other sources of ignition shall be allowed in the confined space. The area shall be designated as No Smoking, No Open Flame Area.

### **Pre-Job Briefing**

The Supervisor or his designate shall conduct a pre-job briefing at the beginning of each shift, with all attendees, authorized workers and the rescue team to review the entry procedures, personal protective equipment requirements, escape and rescue procedures, communications and any potential hazards and controls.

### **Confined Space Attendant**

A Confined Space Attendant shall be stationed at all authorized points of access and egress into the confined space and remain at their post while workers are in the space. The attendant must not have any other duties that conflict with his/her primary duties of observing and communicating with workers within the space. The attendant must be prepared and have means readily available to summon assistance if necessary.

The Confined Space Attendant shall forward the permit to the supervisor once the work is complete.



## **Safe Access and Egress**

Ladders or other safe means shall be used for entry and exit of a confined space and appropriate lighting will be provided in the space.

## **Documentation**

Prior to entering a confined space the following documentation shall be completed using the Confined Space Permit (Appendix A):

- 1) Confined space assessment
- 2) Entry plan
- 3) Rescue plan
- 4) A signed entry permit for each space to be entered
- 5) Air monitoring plan and monitoring results documented
- 6) Communication Plan
- 7) List of authorized workers
- 8) Confined Space Coordination Document as required (Appendix C)

The entire permit shall be available and accessible at the confined space to all workers involved in the entry.

## **Confined Space Assessment**

A competent person shall complete an assessment of each potential confined space prior to entry and make a written determination whether it is a confined space or not. One assessment is permitted for two or more confined spaces that are of similar construction and present similar hazards.

The assessment shall consider:

- Hazards that may exist due to the design, construction, location, use or contents of the confined space or spaces, and
- Hazards that may develop while work is done inside the confined space or spaces

The assessment shall be reviewed and revised as necessary, prior to each new work event.

## **Confined Space Entry Plan**

A written plan specific to each confined space to be entered, shall be developed and communicated to all entrants, attendants and rescue team members.

**Note:** One plan may deal with two or more confined spaces that are of similar construction and present similar hazards.

The plan shall include the identification of hazards and the measures for controlling all hazards identified including provisions for:

- Duties of workers
- Rescue plans
- Personal protective equipment and devices;
- Isolation of energy and control of materials movement;
- Confined Space Attendants
- Communication plan between all stakeholders;
- Adequate means for entering and exiting;

- Atmospheric testing;
- Written instruction for the work to be done including measures for working with hazardous materials
- Ventilation and purging requirements.
- Co-ordination for multiple employers;

### **Rescue Plan**

A written, executable, rescue plan shall be developed for each confined space by individuals trained in conducting rescues. Rescue team members shall be trained according to the requirements spelt out below in the training section.

### **Entry Permit**

The supervisor or the assigned competent designate will review the assessment, plans and test results and verify all controls have been implemented and the space is safe to enter before completing and signing the permit to allow assigned workers to enter the confined space.

### **Air Monitoring Plan**

The plan shall identify the potential atmospheric hazards, frequency of testing required and the competent person assigned to conduct testing. As a minimum a test of a confined space must be made by the designated Competent Person, using a gas monitoring device, calibrated to the manufacturer's specifications and bump tested daily:

- Before the start of each shift,
- If the confined space has been unoccupied for 15 minutes or longer,
- As often as necessary while any worker remains inside the confined space, to ensure that acceptable atmospheric levels are maintained in the confined space during work.
- The results of every test must be recorded on the permit or using Appendix B
- The space must be monitored throughout its depth, taking into account the relative densities of the contaminant gases which may have accumulated in the space, prior to entry.
- Where constant monitoring is deemed necessary the levels shall be documented every 20 minutes as a minimum
- When monitoring indicates the levels of contaminants are starting to rise, work shall be halted until the space and work are reassessed and controls are determined to be adequate.

### **Communication Plan**

A plan for maintaining communication shall be identified and implemented. Any necessary equipment shall be provided, tested and inspected prior to entry. Visual, voice, radio or signal line communication shall be maintained at all times between attendant and authorized entrants.

### **Authorized Workers**

The supervisor shall provide a list of workers authorized to enter the confined space and the workers are required to sign in and out of the confined space, each time they enter or exit on the entry log in Appendix A or Appendix C.

## **Coordination of Multiple Contractors**

Where a City of Guelph Project Manager is responsible for multiple contractors entering a confined space, the Project Manager is responsible for completing the Confined Space Entry Coordination Document (Appendix C).

The Confined Space Entry Coordination shall identify the duties and responsibilities of all parties, related to the entry and work to be done in the confined space. Copies shall be provided to all contractors entering the confined space and the Joint Health & Safety Committee Representatives or Health & Safety Representatives as applicable for each trade union or contractor.

## **Record Keeping**

Confined Space Permit (Appendix A), Confined Space Entry Log and Atmospheric Testing Record (Appendix B) and Confined Space Entry Coordination Document (Appendix C) shall be kept by Health & Safety for a minimum of two years.

Training records shall be kept for a period of four years or until a new record is obtained.

## **Training**

Every worker who enters a confined space or participates in the confined space entry plan shall be given the following training:

- Corporate and Department Confined Space Programs
- Confined Space Entry Awareness
- Confined Space Permit (Appendix A) for each specific space to be entered
- Air Monitoring Procedures and Results
- Emergency Procedures and initiating an emergency response.
- Relevant SOP's, SWI related to the work to be done.

Confined Space Attendants, in addition to the training identified above, shall receive the following training:

- Responsibilities

Refresher training shall be conducted no less than every three years, or sooner should circumstances or legislated requirements change.

Rescue Teams, in addition to the training listed above, shall receive the following training:

- Use of emergency equipment including respiratory equipment
- First Aid/CPR/AED
- Specific rescue training and techniques
- Teams must practice confined space rescues within three months of a confined space entry, simulating rescue operations with a critique for the practice drill. This will be coordinated by a Supervisor within each department.

Training records shall be kept and maintained by Human Resources and the departments responsible for performing confined space entries.

## Reference Documents

OHSA O. Reg. 632/05 – Confined Space  
Add legislation and standards as applicable

## Appendix

- A - Confined Space Planning Document
- B - Confined Space Entry Log and Atmospheric Testing Record
- C – Confined Space Entry Coordination Document
- D – Confined Space Focused Audit Checklist

## REVISION HISTORY

Document Owner	Issue / Revised Date	Reason For Changes
Health & Safety	2010	Initial draft
Health & Safety	January 1, 2017	Merged Hazard Assessment, Planning Form and Permit into a single document.  Some minor wording changes to reflect the change identified above.
Health & Safety	April 2, 2019	Total Rewrite