



CITY POLICY & PROCEDURE

SECTION: HUMAN RESOURCES

NO: HR-HS- 35

REFERENCE: HEALTH AND SAFETY

Date: Feb 9, 2017

**Next Review Date:
Feb 9, 2019**

TITLE: CONFINED SPACE ENTRY AND RESCUE

1.0 POLICY

The City of Dryden is committed to providing a healthy and safe workplace for all employees. The City is committed to diminishing the risks and hazards associated with confined space entry and rescue.

2.0 RESPONSIBILITY

2.1 Manager/Supervisor:

- (a) shall make all employees aware of the Confined Space and Rescue policy and procedure;
- (b) are responsible for ensuring that work tasks/activities are assigned to trained workers;
- (c) will monitor their workers' compliance with the procedure and address any contraventions with the worker and Human Resources (as necessary);
- (d) will ensure all workers are trained on the safe operating procedures for confined space entry and rescue;
- (e) will ensure all required safety equipment and personal protective equipment is available to complete the task safely and that workers are instructed in use, care and maintenance; and,
- (f) will ensure this policy and procedure meets all legislation and regulations.

2.2 Workers:

- (a) are responsible for complying with this policy and procedure;
- (b) will follow the safe operating procedures for this task;
- (c) will use or wear all required safety equipment and personal protective equipment needed to complete the task safely; and,
- (d) will participate in training and FIT testing as required.

3.0 DEFINITIONS

3.1 Confined Space (Ontario Construction Regulations):

Is defined as a space to which or from which access or egress is restricted and in which, because of its construction, location or contents or the work activity therein, a hazardous gas, vapour, dust or fume, or an oxygen deficient atmosphere may occur.

Some examples of a confined space are:

- (a) Wet wells and dry wells in sewage pumping stations;
- (b) Maintenance holes in sanitary and storm sewers as well as the sewer themselves;
- (c) Chlorine rooms; and,
- (d) Ammonia compressor rooms may be considered.

4.0 APPLICATION OF PRINCIPLES

4.1 Pre-plan:

- (a) Determine what is required for entry. Will it be in an area that falls under the Regulations for Construction Projects or Industrial Establishments?
- (b) Will lock out or blank off procedures be required? If so, make sure that you have all the necessary equipment.
- (d) Determine if a hot or cold work permit is required.
- (e) Are any specialized tools or equipment or personal protective equipment required?

- (f) Determine what lighting levels exist and what may be required. If temporary lighting is required, it must be intrinsically safe (explosion proof)

4.2 Check Equipment:

- (a) Ensure that all detection equipment is calibrated as per manufacturer instructions and CSA Standards.
- (b) A system of communications should be in place between the worker and the lookout/hole watch person and home base. If such equipment is used inside the confined space it must also be intrinsically safe.
- (c) Check all personal protective equipment to make sure it is in good repair and working order.

4.3 Traffic Control:

If the entry is to be made where vehicular traffic is a hazard, the following are required:

- (a) All workers shall wear a reflective traffic vest that meets the current CSA standard; and,
- (b) Cones or delineators set up as required by "Temporary Conditions Manual, Book 7".

4.4 Test (Initial):

- (a) If possible, atmospheric testing should be done prior to opening a cover.

4.5 Record Test (Initial):

- (a) All pre-opening test results shall be written on a permanent record sheet.

4.6. Open The Confined Space:

- (a) The removal of any confined space cover should only be done with correct tools and procedures to prevent back injuries, or prevent the occurrence of a spark.

4.7 Ventilate or Purge:

Dangerous atmospheres can be controlled or eliminated either:

(a) Mechanically:

This type of ventilation is basically a portable fan that provides sufficient "good air" in exchange for "bad air". Generally, a fan that provides up to 750-1000 cubic feet of air per minute is used for vault or chamber operations. In larger areas such as large tanks and vessels, larger fans capable of moving up to 5000 cubic feet of air may be required. Be extremely careful of combustible areas and keep in mind that in the case of a combustible/explosive atmosphere that an intrinsically safe fan and/or ducting is required or provision made for 'natural ventilation' by means of opening other covers to create a natural air flow.

NOTE: A minimum safe requirement is 20 air changes per hour with ventilation in place for a minimum of ten minutes before entry.

(b) Respiratory Protective Equipment:

Respiratory protective equipment should be used whenever ventilation is inadequate or impractical. For certain conditions such as oxygen deficient atmospheres, or if the level of toxic gas or vapour is unknown or exceeds the level considered to be immediately dangerous to life or health (IDLH), the use of a self contained breathing apparatus (SCBA) or a supplied air respirator (SAR) with an escape pack is required.

NOTE: In the case of explosive atmospheres, special precautions must be implemented. Entry into an area that has a concentration greater than 50% of the Lower Explosive Limit (LEL) must not be entered for any reason.

4.8 Secondary Test:

- (a) This test is done with the same equipment as the initial test. Care should be taken in performing this test to ensure that the entire work area and full depth of the space is tested, and that sufficient time be taken to allow the sensors to respond properly (minimum 2 minutes, plus 2 seconds per foot of hose). Should either test show a problem atmosphere, the supervisor will be notified before entry is made.

4.9 Record:

- (a) All secondary test results shall be written on a permanent record sheet as was done with the initial test.

4.10 Set Up Means Of Escape/Retrieval:

- (a) There must be a means of adequately retrieving an unconscious worker.
- (b) For all confined space entries the minimum requirement is a full body harness worn by the entrant attached to a lifeline. This ensures maximum ability for a quick vertical retrieval without injury.
- (c) At least one worker trained in Rescue Breathing/Artificial Respiration shall be in the immediate area of the entry into the confined space. This person shall also be wearing a full body harness.

4.11 Enter:

- (a) A continuous atmospheric monitoring device is required for worker protection while in the confined space. When the device sounds an alarm the worker shall leave the area immediately.

4.12 Commence Work

4.13 Emergency Procedures:

- (a) If a worker is in the confined space and the monitor alarm sounds, the worker must leave the space immediately.
- (b) If a worker is in the confined space and the monitor alarm sounds, the attendant or any other worker must **not enter the space** and should notify the supervisor immediately.
- (c) A "system of rescue" shall be in place in order to evacuate, and suitable arrangements be made to remove the worker from the confined space.

4.14 Always conduct a City of Dryden Confined Space Program Hazard Assessment. See APPENDIX "A" attached.

4.15 RESCUERS ACCOUNT FOR MORE THAN 50% OF ALL CONFINED SPACE FATALITIES

5.0 CONFINED SPACE RESCUE PROCEDURE

5.1 A "system of rescue" shall be in place in order to evacuate, and suitable arrangements be made to remove the worker from the confined space.

5.2 Hazards:

Possible hazards associated with a confined space rescue would be:

- (a) Traffic;
- (b) Lifting and/or Hoisting;
- (c) Atmospheric (toxic gas, oxygen deficient, explosive);
- (d) Temperature;
- (e) Lighting;
- (f) Ventilation; and,
- (g) Location.

5.3 Personal Protective Equipment:

- (a) The supervisor is responsible for issuing the necessary protective equipment or clothing, providing training to the worker in its use and maintenance and for ensuring the equipment or clothing is used as required.
- (b) The worker is responsible to use the required personal protective equipment or clothing as assigned in accordance with City policies and procedures. The worker is responsible to obtain steel-toed boots or shoes with puncture resistant soles if their works requires it. The worker is also responsible for the care and maintenance of any personal protective equipment assigned and to report defects to their supervisor or designate immediately

5.4 **Procedure:**

Rescue Work I Confined Spaced:

- (a) This procedure covers method of confined space rescue retrieval through Rescue Lifeline Rope. All workers in confined spaces shall wear a rescue lifeline rope attached to an approved body harness at all times and all safety workers shall be competent on the rescue equipment and trained in First Aid and CPR.

Equipment:

Confined Space Rescue Equipment shall include the following:

- (a) Approved rescue apparatus/guardrail system including winch;
- (b) Nylon 5/8" rescue lifeline rope; and,
- (c) Approved rope grab device.

Equipment, Location and Storage:

Confined space rescue equipment shall be available for safety workers to rescue worker(s) in confined space safely and effectively.

The Confined Space Rescue equipment shall consist of:

- (a) Harness – attached to worker;
- (b) Confined space rescue apparatus/guardrail system – support of worker; and,
- (c) Rescue winch – raising of worker.

The Confined Space Rescue equipment shall be stored:

- (a) At the DMTS storage garage;

Use of Rescue Equipment:

- (a) Rescue apparatus/guardrail system and winch to be readily accessible before entry into confined space area.
- (b) Each worker in confined spaces shall test and document atmosphere and wear an approved body harness.
- (c) Attach a separate rescue lifeline rope to D ring of body harness of each worker prior to entry into the confined space.
- (d) When rescue assistance is determined to be required, the rescuer must first activate the emergency response procedure.
- (e) Rescuer shall setup rescue apparatus and winch over confined space entry hole. Attach rope grab to rescue lifeline of worker to be rescued.
- (f) Attach winch line of rescue winch to rope grab and slide down to workers D ring on rescue lifeline.
- (g) Extract the worker by winching up and out of confined space opening. Once out of confined space, position worker on ground.
- (h) The rescuer shall apply First Aid/CPR if required and continue to do so until help arrives.

History			
Approval Date:	May 16, 2011	Approved by:	By-law 3876-2011
Review/Amendment Date:	February 9, 2017	Approved by:	CAO E. Remillard
Review/Amendment Date:		Approved by:	
Review/Amendment Date:		Approved by:	
Review/Amendment Date:		Approved by:	

APPENDIX "A"

Confined Space Program Hazard Assessment

Part 1: Recognition of Confined Spaces

Definition (Occupational Health and Safety Act)

"Confined Space" means 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 its construction, location or contents or because of work that is done in it.

A space is only considered a confined space when it meets the following conditions:

- It is **NOT** designed and constructed for continuous human occupancy.
- It **IS** possible to have an atmospheric hazard.

Part 2: Hazard Assessment

NOTE: Hazard assessments will be done by "competent" persons.

Every confined space must be assessed for all hazards. Hazard assessments are critical to identifying existing or potential hazards associated with each confined space. The hazard assessment also includes work practices that may generate hazardous atmospheres. Once hazards have been assessed, control measures must be determined to eliminate or control the hazards if elimination is not possible.

Atmospheric Hazards

"Atmospheric Hazard" means;

1. accumulation of flammable, combustible or explosive agents,
2. an oxygen content in the atmosphere that is less than 19.5% or more than 23% by volume, or
3. the accumulation of atmospheric contaminants, including gases, vapors, fumes, dust or mists that could:
 - a. result in acute health effects that pose an immediate threat to life; or,
 - b. interfere with a person's ability to escape unaided from a confined space.

Associated Hazards

Hazards to be aware of include, but are not limited to;

- flammable, combustible or explosive agents,
- toxic air contaminants, smoke, fume and dusts,
- residual chemicals,
- ignition hazards,
- moving parts,
- thermal stress to worker,
- engulfment,
- electrical,
- visibility,
- tripping or falling, (Note: If over 3 meters, fall protection is required)
- traffic (pedestrian and vehicular),
- biological (animals, droppings, etc.).

Part 3: Hazard Control

Confined Space Entry Plan – 1(a)

Confined Space Location:
Name of equipment or space to be entered: (e.g. manhole, pump station, tank etc.)
Type of work to be done: (e.g. lifting pumps, cleaning, maintenance or repairs etc.)
Co-ordination Document: Will City of Dryden personnel be working with non-City of Dryden personnel during this confined space entry? Yes ☐ No ☐ (If yes attach copy of co-ordination document to plan)

Rescue procedures:

If communication is lost between Attendant & Entrant, or if Entrant shows signs of distress or unconsciousness, Attendant will immediately call 911 and start retrieval. Once entrant(s) has been removed from the space and out of harms way Attendant will administer first-aid as required until Emergency Medical Staff arrives.

Rescue Equipment:

Harness ____ Life Line ____ Man Lift ____

Winch ____ 2-Way Radio ____ Cell Phone ____

Required Personal Protective Equipment:

Gas Monitor ____ Harness ____ Hardhat ____

Safety Boots ____ Gloves ____ Safety Glasses ____

Flash Light ____

Other as required _____

Confined Space Entry Plan – 1(b)

Attendant(s) Duties		
Attendant 1	Attendant 2	
Name:	Name:	
Location:	Location:	
Signaling device:	Signaling device:	
Role Of Attendant(s): • Shall not enter the confined space at any time • Stationed outside and near entrance • Monitors the safety of the worker(s) inside • Provides assistance and summons adequate rescue response if required • In constant communications with entrants • Provided with a communication device to summon rescue • Will lock out equipment as required		
Entrants Duties:		
Entrant 1	Entrant 2	
Name:	Name:	
Location:	Location:	
Signaling device:	Signaling device:	
Role of Entrant(s): • Inspect all rescue equipment (harness, man lift, winch & fall arrest) • Will wear all PPE as required • Continually monitor air quality and report to attendant • Will remain connected to lifeline at all times • In constant communications with attendant • Will lock out equipment as required		
Training Requirements For Attendants/Entrants:		
	YES	NO
• General Confined Space Entry	___	___
• Entry & Rescue Equipment	___	___
• On Site Rescue Procedures	___	___
• First-Aid & CPR	___	___
Ventilation & Purging Requirements:		
• Continuous purging is required at all times unless specified otherwise • Place supply hose as close to the bottom of the space as possible • Place the blower upwind and as far away from the entrance as possible to prevent contaminated air re-entering the space		

Confined Space Entry Permit

Confined Space Location: _____								
Description of Work: _____								
Attendant: _____				Operator in Charge: _____				
Issued (date/time): _____				Expires (date/time): _____				

Description of Confined Space								
Hazards: _____								
Control Measures: _____								

Confined Space Entry/Exit Record								
Entrant Name	Time In	Time Out	Time In	Time Out	Time In	Time Out	Time In	Time Out

Atmospheric Testing				
Gas Monitor -		Calibration Date -		Calibrated By -
Bump Test?	Yes _____	Date	Time	Performed By -
		:		
Hazard	Oxygen (O2)	Combustibility (LEL)	Carbon Monoxide (CO)	H2S
Permissible Levels	19.5% - 23%	Cold Work 0 – 10% Hot Work 0 – 5%	Less Than 25ppm	Less Than 5ppm
Test #1 Time	:			
Test #1 Result	%	%	ppm	ppm
Test #2 Time	:			
Test #2 Result	%	%	ppm	ppm
Test #3 Time	:			
Test #3 Result	%	%	ppm	ppm
Test #4 Time	:			
Test #4 Result	%	%	ppm	ppm

Entry / Rescue Equipment	Serial # (if applicable)	Inspected By	Date

I verify that this Entry permit complies with the Entry Plan for this Confined Space.

Name: _____ Signature: _____

Department: _____ Date: _____