



## CONFINED SPACE ENTRY PROCEDURES

CONFINED SPACE NAME:

ID #

14<sup>th</sup> Street Plaza Fountain

N/A

LOCATION:

14<sup>th</sup> Street Plaza

Pit

EP #

10

DATE:

November 2012

HAZARDOUS ATMOSPHERIC RATING:

**Low**

### SCOPE OF WORK (From Hazard Assessment)

This Hazard Assessment (HA) refers to entry for the purpose of inspection and minor repairs with manual tools on valves/piping. Works tasks are less than 15 minutes.

*Hot work and other atmospheric contaminant generating activities are not included in this Hazard Assessment.*

### SUMMARY OF POTENTIAL HAZARDS

	Hazards	Undisturbed Space	Work Tasks	Additional Comments
ATMOSPHERE	Oxygen (O <sub>2</sub> ) Deficiency	No	No	See Hazard Assessment for additional details.
	O <sub>2</sub> Enrichment	No	No	
	Chemical	No	No	
	Biological Hazards	Yes	No	
	Fire/Explosion	No	No	
SAFETY HAZARDS	Structural	No	No	
	Engulfment	No	No	
	Entrapment	No	No	
	Electrical	No	No	
	Access/egress	Yes	No	
	Fall	No	No	
	Slip/Trip	Yes	No	
	Visibility/Light Level	Yes	No	
	Baffles/internal arrangement	Yes	No	
	Floor openings in space	No	No	
PHYSICAL AGENTS	Noise/Vibration	No	No	
	Temperature	Yes	No	
	Non/Ionizing Radiation	No	No	
	Laser	No	No	
OTHERS	Ingestion/Skin Contact	No	No	
	Mechanical	No	No	
	Traffic Hazard	Yes	No	
	Hydraulic/ Pneumatic	No	No	

**COMPLETED BY:**

**Prepared by:** Peter Bergholz, BSc, CIH, AMEC, November 2012

**Reviewed by:** Victor Leung, MSc, CIH, ROH, CRSP, AMEC, November 2012

**SOURCE:** Paul Elsoff & Richard Howard

This Entry Procedure pertains to the activity and confined space listed above. This entry procedure is required to be reviewed within 3 years of preparation. Any change in activity requires a review of the related HA and a review of the entry procedures (especially when contaminants will be generated by an activity such as welding, radiation or chemical usage).



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Topics	No.	Tasks/ Equipment Required
<b>Prior to Entry</b>		
<b>Equipment Required</b>	1.	<p>Ensure the following is available:</p> <ul style="list-style-type: none"> <li>Pick up gas detector (with pump). Gas detector must be bump tested and/or calibrated prior to use and have the following sensors: <ul style="list-style-type: none"> <li>oxygen (O<sub>2</sub>),</li> <li>flammable/combustibles (LEL),</li> <li>carbon monoxide (CO), and</li> <li>hydrogen sulphide (H<sub>2</sub>S)</li> </ul> </li> <li>(City standard)</li> <li>Two-way radio and/or cellular telephone (for Standby Person and Entry Supervisor)</li> <li>Sucker truck/vacuum truck (if required)</li> <li>Portable lighting (flashlight or portable lighting with GFCI)</li> <li>Portable ladder</li> <li>Primary barriers/pylons</li> </ul>
	2.	<p><b>General PPE:</b></p> <ul style="list-style-type: none"> <li>Coveralls</li> <li>Safety boots</li> <li>Work gloves</li> <li>Safety glasses with side shields</li> </ul>
	3.	<p><b>Rescue equipment:</b></p> <ul style="list-style-type: none"> <li>Harness (worn)</li> <li>Lifeline (available)</li> <li>Tripod</li> <li>Winch</li> <li>2<sup>nd</sup> gas detector</li> </ul>
<b>Entry Permit/Gas Testing Log</b>	4.	Complete and post the <b>Confined Space Entry Permit</b> at the entrance. (NOTE: Update the Permit accordingly.)
	5.	Entry Supervisor to sign Confined Space Entry Permit once all equipment is ready to be installed and observe initial entry.
<b>Space Preparation</b>	6.	Erect primary barriers around opening to the space to isolate space from pedestrian traffic.
	7.	If required and if practicable, rinse space prior to entry if space contains visible amounts of bacteria/fungi/sludge. Remove water/sludge from outside the space at all times with sucker truck.
<b>Pre-Work</b>	8.	Inspect all equipment for damage before use. Remove damaged equipment from service.

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Topics	No.	Tasks/ Equipment Required
Coordination	9.	Standby and Entry Supervisor must have a two-way radio and/or cellular telephone.
	10.	Standby must have training in monitoring duties, initiating emergency response, operation of retrieval equipment and removal of injured victims using this equipment.
	11.	Rescue personnel must have training in first aid and CPR.
	12.	Rescue equipment must be available (tripod and winch).
	13.	Harness must be worn and lifeline available at all times.
Isolation and Lockout	14.	<p>Space must be isolated and locked out prior to entry (if working on pipes).</p> <ul style="list-style-type: none"> <li>Follow space specific isolation and lock out document.</li> <li>Document must be available on-site prior to work.</li> </ul>
Gas Testing	15.	Persons calibrating/bump testing and operating the instrument must have appropriate training.
	16.	Test the atmosphere prior to entry; continuously during entry and if the space is left vacant for more than 20 minutes. Record the results on the Confined Space Entry Permit every 20 minutes.
	17.	Measure gas concentrations at the top, middle and bottom of the space (using pump and tubing). <i>Remember there is a delay in response as air is pumped into the instrument (approx. 1 sec per foot) and there is additional sensor response time.</i>
	18.	<p><b>Allowable gas concentrations (before and during entry):</b></p> <p>Entry and work in the space can occur only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>O<sub>2</sub>: 20.9 % <math>\pm</math> 0.7 % is acceptable</li> <li>LEL: 0 % <math>\pm</math> 2 %</li> <li>CO: 0 ppm <math>\pm</math> 3 ppm</li> <li>H<sub>2</sub>S: 0 ppm <math>\pm</math> 1 ppm</li> </ul> <p>If these criteria cannot be met then the space must be evacuated.</p> <p><b>NOTE:</b> The space cannot be re-entered until levels are within the acceptable concentrations listed above (re-calibrate gas tester etc.).</p> <p><b>NOTE: The above 'acceptable' concentrations are based on the approximate sensor error (for O<sub>2</sub>) for typical gas testing instruments and 10% of the applicable exposure limits (for LEL, CO and H<sub>2</sub>S) and is presented for compatibility to the OHSR definition of 'clean respirable air' as it applies to low hazardous atmospheric conditions as per OHSR Section 9.1 Definitions.</b></p> <p><i>If the problem persists contact Entry Supervisor for further instructions, see Entry Permit.</i></p>
	19.	The entrant must wear the atmospheric testing instrument.

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**Low**

Topics	No.	Tasks/ Equipment Required
Ventilation	20.	Not required as per OHSR 9.31 – continuous atmospheric monitoring will be conducted.
<b>During Entry</b>		
Gas Testing	21.	Continuous monitoring required – as above.
	22.	Record the gas testing results on the Confined Space Entry Permit at least every 20 minutes.
Ventilation	23.	Not required as per OHSR 9.31 – continuous atmospheric monitoring will be conducted.
Standby Person	24.	Standby person must remain at or near the entrance to the space during the entry.
	25.	Standby person must monitor pedestrian traffic in the area.
	26.	Standby must order the evacuation of the confined space if an alarm sounds.
Personal Protective Equipment (PPE)	27.	All entrants must wear <b>General PPE</b> (see equipment required list above).
	28.	Harness must be worn and lifeline available at all times.
Task/Additional Requirements	29.	Portable lighting (flashlight or portable light with GFCI) required.
Rescue Plan	30.	To activate the emergency response, Standby Person contacts 911 if first aid is required.
	31.	Standby Person contacts the Entry Supervisor using radio/cell phone and advises them of the situation and Entry Supervisor will respond to the scene with a gas detector.
	32.	<b>Self-rescue</b> if possible
	33.	<b>Entry Rescue:</b> If self-rescue is not possible: <ul style="list-style-type: none"> <li><b>Lifeline NOT attached:</b> <ul style="list-style-type: none"> <li>Standby Person sets up the rescue equipment (tripod, winch and lifeline)</li> <li>Entry Supervisor becomes Standby Person</li> <li>Standby Person becomes Rescuer</li> <li>Rescuer (former Standby Person) tests the air (using the 2<sup>nd</sup> gas detector) and can enter the space if the following conditions are met: <ul style="list-style-type: none"> <li>O<sub>2</sub>: 19.5 – 23 %</li> <li>LEL: ≤ 10%</li> <li>CO: ≤ 25 ppm</li> <li>H<sub>2</sub>S: ≤ 10 ppm</li> </ul> </li> </ul> </li> <li>Rescuer (former Standby Person) wears the gas detector and enters the</li> </ul>

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Topics	No.	Tasks/ Equipment Required
		<p>space to evaluate the injured worker.</p> <ul style="list-style-type: none"><li>• If an evaluation of the injured worker reveals it is safe to move them – then move the injured worker to below the entry point and hook them up to the lifeline via their harness.</li><li>• Standby person removes the injured worker from the space using the winch.</li><li>• Rescuer exits the space and assists Standby Person.</li><li>• If the preceding conditions cannot be met, the victim is to remain in the space until advanced help arrives.</li></ul>
<b>After Entry Has Been Completed</b>		
<b>Gas Testing</b>	34.	After the entry, record the peak, TWA, STEL, occurrence of alarms on the Confined Space Entry Permit.
	35.	Entry Supervisor to return the completed Confined Space Entry Permit to the Confined Space Program Administrator for filing (must be kept for 1 year).
<b>Work Coordination</b>	36.	Ensure all entrants and tools have been removed from the space and secure the opening.
<b>Equipment</b>	37.	Return all equipment to its proper location.
	38.	Return gas detector to the storage location.

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