


**The UNIVERSITY of WESTERN ONTARIO**  
**Physical Plant and Capital Planning Services Division**

<b>POLICY:</b>  <b>CONFINED SPACE</b>			<b>NUMBER:</b> S-8
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<b>PREPARED BY:</b>  PP&CPSD	<b>AUTHORIZED BY:</b>  R. Langille 	<b>CLASSIFICATION:</b>  Safety Procedure	<b>EFFECTIVE:</b> January 28, 2010
			<b>SUPERSEDES:</b> October 20, 2008

Prior to all Confined Space entries, the Confined Space Entry Permit will be used to assess the hazards involved in each Confined Space. The Permit will be used in its entirety by the Supervisor and the Entry Crew to accurately assess the Confined Space and to assess any potential hazards.

The Supervisor must complete Part 1 of the Permit along with the Entry Crew. The Supervisor must approve the Confined Space entry prior to any worker obtaining the Confined Space equipment. Part 2 of the form identifies the responsibilities of the attendant and the entrant along with the required emergency procedures.

If the Confined Space Entry Permit (Part 1) indicates a safety situation such as the potential for engulfment or entanglement, Western's HazMat / Confined Space Rescue Team must be on site at the location of the confined space and prepared to perform an emergency rescue if required. (See Appendix 1, Call Out Procedure).

If the Supervisor makes use of a contractor to provide on-site rescue procedures for Western employees, the Supervisor must ensure:

- the Western HazMat / Confined Space Rescue Team is notified via the OH&S Safety Consultant or another HazMat / Confined Space Rescue Team member as listed in Appendix 1.
- the contractor has reviewed PPD Safety Policy S-8, Confined Space, with the Supervisor and a representative from the Western HazMat / Confined Space Rescue Team.
- the contractor must adhere to the OH&S Act and Regulations for Confined Spaces.
- if the contractor provides different personnel for another entry, the new personnel must review PPD Policy S-8, Confined Space, with the Supervisor and a representative from Western HazMat / Confined Space Rescue Team.

The Confined Space Entry Crew will complete Parts 3 and 4 of Confined Space Entry Permit on site during the entry.

Confined spaces as defined below, shall not be entered unless the atmosphere is determined to be safe and any other necessary precautions can be taken.

A Confined Space means a fully or partially enclosed space:

- ***That is not both designed and constructed for continuous human occupancy.***
- ***In which atmospheric hazards may occur because of its construction, location, contents, or work performed in it. Ontario Regulation 632/05.***
- ***The space may include, but is not limited to manholes, pumping stations, sump pits, and electrical vaults.***

**CONFINED SPACE**Qualifications

In order to enter a Confined Space, perform air testing or be an attendant, the following are required:

1. Successfully attend a one day Confined Space training seminar, plus a refresher course every two years.

The seminar will include:

- Instruction on the use of air monitoring equipment, ventilator and retrieval equipment.
- Training on all legislative requirements and PP&CPSD Confined Space Policy.
- Hazards associated with Confined Space entry.

2. Attendant(s) must also have valid first aid/CPR certification.

Entry Requirements

A minimum of one qualified worker (Attendant) will stand guard outside the Confined Space. Radio contact shall be maintained between the entrant and attendant, and Campus Community Police Services (CCPS).

- Pre-calibrated, fully charged air monitor with pump and sufficient remote sampling hose.
- Second air monitor to be worn by the Entrant.
- An air horn or similar device where audible or visual contact may be lost between entrant and attendant(s).
- Fall arrest / retrieval equipment (must be worn and connected at all times)
- Ventilation fan if air sampling indicated the presence of hazardous atmosphere. In this case, the space must be ventilated for at least 10 minutes; the space must not be re-entered until air testing indicates safe atmosphere and the space continuously ventilated for the duration of the entry.
- Materials/equipment necessary to ensure safety and security of work site.
- **Confined Space Entry Permit** (attached)

Entry Procedures

1. Where electrical, mechanical or piping systems in a Confined Space represent a hazard, they shall be capped, blocked off, locked out and tagged as required.
2. Follow set-up instructions for air monitoring equipment and test the air at the Confined Space access(if possible),
3. Open access and insert remote sampling tube, drawing samples from top, middle and bottom of the Confined Space.
4. Ventilation requirement. (see entry requirements).
5. Set up retrieval equipment.
6. Entrant will wear air monitoring equipment.
7. Use confined space radio to contact CCPS on channel 5 to log entry time and location. This radio is equipped with an emergency button to be used if needed.
8. Entrant shall check condition of electrical, mechanical systems and structural integrity upon entry.
9. Confined Space Entry Permit (Part 3) to be filled out as work is being done. Part 4 is to be filled out at the completion of work. Indicate details and possible hazards on the form.
10. Exit Confined Space and confirm with CCPS upon completion.
11. Return Permit and equipment to Tool Crib.

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**SPECIAL CASES:**

In the event the entry crew supervisor is not available to complete Part 1 of the permit and approve the Confined Space entry, the Two-Person rule will apply:

A supervisor from the same organizational group and another O&M employee who has knowledge of the work, and have both completed Confined Space training, will both sign Part 1 of the Permit.

**ATTACHMENTS:**

1. Confined Space Entry Permit
2. Reminder Steps Form
3. Confined Space Entry Air Test Equipment Operation
4. Call-out Procedure of HazMat/Confined Space Rescue Team

## **REMINDER STEPS**

- 1. Prepare monitor and retrieval equipment.**
- 2. Was fresh air zero balance completed?      Yes    No**
- 3. Confirm safe air in space.**
- 4. Notify Campus Community Police Services (CCPS) prior to entry.**
- 5. Attendant to stand guard, observe and monitor.**
- 6. Ensure visual and voice contact between entrant and the attendant.**
- 7. Notify CCPS after completion of work.**
- 8. A test of the air in the space must be made and recorded every time there is an interruption in the work (e.g. Lunch, rest break, trip to get parts or tools)**
- 9. Return all paper work and equipment to the Tool Crib.**
- 10. REPORT any broken or malfunctioning equipment to the attendant of the Tool Crib.**

## CONFINED SPACE GAS MONITOR OPERATION

UNITS WILL BE SITTING ON THE CHARGER IN THE TOOL CRIB WHEN NOT IN USE.

● **GREEN LIGHT** INDICATES A FULL CHARGE.

BEFORE USE, ENSURE THAT THE UNIT IS CALIBRATED ON THE GALAXY UNIT AND REGISTERS “PASS”. IF IT REGISTERS “FAIL” .... **DO NOT USE**

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### **TURN ON UNIT:**

1. Press on/off button on side of unit.
2. Wait for self test to finish (takes approximately 2 minutes).

### **IF SENSORS DO NOT READ:**

**O2 @ 20.8 | LEL @ 0 | CO @ 0 | H2S @ 0**

1. Push and hold reset on the side of the unit
2. Unit will ask for zero calibration : push **on/off** button once.
3. Unit will ask for span calibration: **do not** push any buttons – **wait**.

### **UNIT IS READY FOR USE:**

Complete the Confined Space Entry Permit. Indicate which unit is used by **Serial Number**.  
Leave unit and pump on for entire entry.

### **ALLOWABLE LEVELS**

**OXYGEN - 19.5 – 23 %**

**CO (carbon monoxide) - 0 – 35 ppm**

**LEL (lower explosive level)**

**H<sub>2</sub>S (hydrogen sulphide)- 0 - 10 ppm**

**0 - 5% FOR HOT WORK**

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### **IF SENSOR ALARM SOUNDS:**

1. **Get out immediately.**
2. Check instrument for obvious faulty conditions.  
.....**IF ALARM CONTINUES:**
3. Identify cause of alarm (flashing numbers on screen indicates which sensor is in alarm) and correct if possible.
4. Ventilate space if required and allow time for exchange of air in the space before retesting.
5. RETEST space until test results indicate no alarm condition.
6. Indicate on **Part 3** of the Confined Space Entry Permit the reason for the alarm and the new sampling results.

### **IF THE BATTERY ALARM SOUNDS:**

1. You have 15 minutes or less of battery life.

### **IF THE PUMP ALARM SOUNDS:**

1. Check for air flow blockage (kink in hose, hose submerged)
2. Reset the pump by pressing the **on/off** button.
3. If there is no blockage, have batteries changed.

**If entering a different Confined Space, complete a new Confined Space Entry Permit.**

## APPENDIX 1

### CALL OUT PROCEDURE FOR HAZMAT / CONFINED SPACE RESCUE TEAM

#### During Normal Working Hours:

Contact one of the following (in the order shown) to inform of the need for team standby:

NAME	WORK EXTENSION	CELLULAR
Tony Hammoud	88730	519-521-8444
Mike Gaylard	88292	519-617-0958
Kyle Pollard	83093	519-777-4817

#### OUTSIDE OF NORMAL WORKING HOURS:

If the HazMat / Confined Space Rescue Team is requested for standby (non-emergency) for an urgent entry, contact CCPS.

CCPS will contact HazMat / Confined Space Rescue Team members appropriately.

**FOR EMERGENCY SITUATIONS IN THE CONFINED SPACE CONTACT  
CCPS AT 9-1-1**



- Follow Confined Space Policy S-8
- Determine all relevant Work Procedures prior to entry

CONFINED SPACE ENTRY PERMIT		Confined Space Health and Safety Assessment
Date - _____ Time - _____		<b>TO BE COMPLETED PRIOR TO STARTING JOB REVIEW</b>
Entrant - _____		<input type="checkbox"/> Lockout / Tagout
Attendant - _____		<input type="checkbox"/> Hazardous Energy Control
Work Order # - _____		<input type="checkbox"/> GFCI Required
Location of Confined Space	Identification number	<input type="checkbox"/> Traffic / Barriers
Description of Confined Space		<input type="checkbox"/> Public Hazard / Barriers
		<input type="checkbox"/> Hazardous Substances - MSDS
Description of work to be done		<b>PERSONAL PROTECTIVE EQUIP</b>
Manhole <input type="checkbox"/>	Wells <input type="checkbox"/>	<input type="checkbox"/> Eye Protection
	Sump/Sewage Pit <input type="checkbox"/>	<input type="checkbox"/> Hard hat
Other <input type="checkbox"/>		<input type="checkbox"/> Hearing Protection
		<input type="checkbox"/> Face Shield
		<input type="checkbox"/> Chemical Protection
		<input type="checkbox"/> Guards / Covers
		<b>SAFETY EQUIPMENT</b>
		<input type="checkbox"/> Gas Monitor ID # - _____
		<input type="checkbox"/> Gas Monitor ID # - _____
		<input type="checkbox"/> 2 way Radio required
		<input type="checkbox"/> Retrieval System
		<input type="checkbox"/> Safety harness
		<input type="checkbox"/> Fire Extinguisher
		<input type="checkbox"/> Water / eye wash
		<input type="checkbox"/> Ventilation Equipment
		<b>HAZARDOUS ATMOSPHERES</b>
		<input type="checkbox"/> Flammable
		<input type="checkbox"/> Toxic
		<input type="checkbox"/> Irritant
		<input type="checkbox"/> Corrosive
		<input type="checkbox"/> Oxygen-Deficient
		<b>ENVIRONMENTAL HAZARDS</b>
		<input type="checkbox"/> Temperature (ambient / contact)
		<input type="checkbox"/> Chemical
		<input type="checkbox"/> Noise
		<input type="checkbox"/> Mechanical Equipment
		<input type="checkbox"/> Vibration
		<input type="checkbox"/> Hoisting / Lifting Plan
		<input type="checkbox"/> Slip Hazards
		<input type="checkbox"/> Engulfment see PART 2
		<input type="checkbox"/> Entanglement see PART 2
Equipment or Materials located and/or brought into in this Confined Space		<b>OTHER ANTICIPATED HAZARDS</b>
		<input type="checkbox"/> Spark producing or HOT WORK
		<input type="checkbox"/> Operational tasks
		<input type="checkbox"/> Spilled liquid
		<input type="checkbox"/> Radiation
		<input type="checkbox"/> Material handling

**REVIEW OPERATING PROCEDURES WITH WORKERS PRIOR TO THIS APPROVAL**

Permit Approved by : \_\_\_\_\_  
 Supervisor Name \_\_\_\_\_ Time Period : \_\_\_\_\_ to \_\_\_\_\_  
 Signature \_\_\_\_\_ Date: \_\_\_\_\_  
 Tool Crib Approval \_\_\_\_\_

PART 2

## ON SITE RESCUE PROCEDURE

1 It is the responsibility of the **ATTENDANT** to monitor the situation and to watch the status of the **ENTRANT**. He/she is the operator of the retrieval system and **must not enter** the confined space to attempt a rescue.

2 The primary rescue method for the entrant is the **RETRIEVAL SYSTEM**. The **ENTRANT** shall use a full body harness, with a retrieval line attached to the "**A**" **Ring** at the centre of the back or the "**D**" **Rings** on the shoulder points using a spreader. The **ENTRANT** is not allowed to unhook from the retrieval equipment at any time during the confined space entry.

If an **EMERGENCY** situation occurs, the attendant is to :

- 3
- ▶ 1 - **NOTIFY UNIVERSITY POLICE IMMEDIATELY AND INDICATE LOCATION AND STATUS**
  - ▶ 2 - **OPERATE THE RETRIEVAL SYSTEM TO EXTRACT THE ENTRANT**
  - ▶ 3 - **ADMINISTER FIRST AID IF REQUIRED AND WAIT FOR EMERGENCY PERSONNEL**

## ENVIRONMENTAL HAZARD PRECAUTIONS

If the Confined Space Entry Permit (Part 1) indicates a safety situation such as the potential for **engulfment** or **entanglement**, Western's Haz. Mat / Confined Space Rescue Team must be on site and prepared to perform an emergency rescue if required, before the **ENTRANT** enters the space.

(See Appendix 1, Call Out Procedure, Policy S8)

### WARNING

ADVANCE HAZARD ASSESSMENTS of our Confined Spaces may not be accurate and safe for workers. Therefore, it must be understood that a visual inspection is to be completed by the Entrant and Attendant prior to the Confined Space Entry. Such things as structural integrity, trip, slip, entanglement, risk of drowning, are some of the dangers associated with Confined Spaces. In all circumstances, the Confined Space must be made safe before an entry.

## ENTRY TEAM AIR SAMPLING RESULTS

To be performed at various levels in the confined space



<i>Time of Entry :</i>	<i>University Police notified - Y / N</i>
<i>am/pm</i>	

The Space is Entered  with  without continuous ventilation

Date	Time		
<b>OXYGEN</b>	<b>COMBUSTIBLES</b>	<b>H<sub>2</sub>S</b>	<b>CO</b>
O <sub>2</sub> %	LEL %	0 - 10 ppm	0 - 35 ppm

▶ START WITH NEW AIR SAMPLE IF THERE IS AN INTERRUPTION IN WORK ◀

Date	Time		
<b>OXYGEN</b>	<b>COMBUSTIBLES</b>	<b>H<sub>2</sub>S</b>	<b>CO</b>
O <sub>2</sub> %	LEL %	0 - 10 ppm	0 - 35 ppm

AIR MONITOR ALLOWABLE LEVELS
<b>O<sub>2</sub> - OXYGEN</b> 19.5 - 23 %
<b>LEL - LOWER EXPLOSIVE LEVEL</b> 0 - 10% for Cold Work 0 - 5 % for Hot Work
<b>H<sub>2</sub>S - HYDROGEN SULFIDE</b> 0 - 10 ppm
<b>CO - CARBON MONOXIDE</b> 0 - 35 ppm

*Were Any Alarm Situations Encountered?*  
 Yes       No  
 If so what action was taken?

**Explain**

EXIT SPACE IMMEDIATELY UPON RECEIPT OF ANY ALARM ENCOUNTERED AT ANY TIME DURING THE ENTRY. NOTIFY YOUR SUPERVISOR, RE-ASSESS AND START OVER.

ENTRY TEAM - SIGN AFTER COMPLETION OF ENTRY

ENTRANT \_\_\_\_\_ ATTENDANT \_\_\_\_\_

Return this document to the tool crib for documentation

