

<b>Procedure Title</b>	<b>Confined Space Entry</b>		
<b>Date of Issue</b>	March 21, 2007	<b>Related Policy</b>	
<b>Revision Dates</b>		<b>Related Forms</b>	
<b>Review Date</b>		<b>Originator</b>	System Administrative Team
<b>References</b>			

**Procedure:**

**1. Authority:**

- \* Bluewater District School Board Policy BP 3801-D Health and Safety regulates the Occupational Health and Safety requirements to ensure all students and staff has a safe environment.
- \* Section 119 Confined Spaces of Regulation 851, Industrial Establishments, of the Ontario Health and Safety Act.

Related Procedures

AP 3841 – D Hot Work

AP 3857 – D School Equipment Tagout and Lockout

**2. Definitions:**

- 1) “Confined Space” means 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 the work that is done in it.
  
- 2) “Atmospheric Hazards” means;
  - a) the accumulation of flammable, combustible, or explosive agents
  - b) an oxygen content in the atmosphere that is less than 19.5 per cent or more than 23 per cent 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.

**3. Board Requirements:**

- \* Appoint a competent person to assess the physical and chemical hazards of the confined spaces and any other hazards to which the worker may be exposed. Must specify the necessary tests to

determine whether employees are likely to be exposed to the hazards.

- \* In consultation with the Health and Safety Committee, establish, sign and date procedures each year for confined space entry and emergency response.
- \* Establish an entry permit system.
- \* Specify and provide the necessary safety and emergency equipment, as determined by the hazard assessment.
- \* Train and instruct every employee likely to enter a confined space on the procedures and equipment to be used.

#### 4. Supervisor Responsibilities:

In assigning tasks requiring entry into a confined space, the supervisor must:

1. prepare a confined space entry permit, detailing the work to be performed and the perceived hazard.
2. ensure that all participants are briefed on every safety procedure to be followed.
3. appoint a "person in charge" of each crew; and
4. know the actual or potential hazards of entry into any confined spaces within his or her jurisdiction.
5. be competent and trained in the following aspects of confined space entry: proper procedures and safety equipment required; proper procedures for emergency rescue work.

#### 5. Person in Charge:

The person in charge has the following responsibilities:

1. ensure that all work can be, and is, conducted both safely and in the prescribed manner;
2. review the safety and job procedures with employees involved in each assignment;
3. ensure that the *Confined Space Site Checklist* is completed;
4. ensure that the required safety equipment is on site and in proper working condition;
5. ensure that the air content is monitored at all times and documented and
6. ensure that a person properly trained in artificial respiration is conveniently available when work is done in a confined space that contains, or may contain, hazardous gas, vapour, dust or, that has an oxygen content of either less than 19.5% or more than 23% and that cannot be purged and ventilated safely throughout the work.

#### 6. Safety Watcher:

The person selected to act as safety watcher must stand at the confined space's access point. This person must know the possible hazards, what action to take in an emergency and how to organize additional help without delay in emergencies.

When a safety watcher has been appointed, it becomes his or her duty to oversee all safety requirements in and around the confined space. Specifically, the safety watcher has the following responsibilities:

1. ensure that the protective equipment and devices required for the entry are available to, being used by or being worn by those entering the space, as the case may be;
2. ensure that the *Confined Space Site Checklist* is complete before the entry
3. maintain continuous contact with the workers in the confined space;
4. deliver, from outside the confined space, equipment or material to the workers inside;
5. implement emergency procedures immediately when emergencies occur;
6. guard the access point at all times;

**NOTE: If the safety watcher has to leave, even for just a few minutes, either the workers must leave the confined space for the duration of the absence, or another competent person must be detailed to act as temporary safety watcher; and**

7. help conduct emergency removal from the confined space, if needed;  
**HOWEVER, rescuers must never enter the confined space before a) having put on all equipment required to ensure maximum safety, and b) ensuring that enough competent staff is on hand to help.**

**7. Entrant**

Employees entering the confined space have the following responsibilities:

1. participate in training and ensure they fully understand the job's requirements, including the scope of the work and the applicable safety procedures;
2. ensure their personal safety and that their actions do not endanger or harm co-workers;
3. report unsafe conditions to the person in charge;
4. wear approved protective clothing and devices;
5. ensure all accidents/incidents are reported; and
6. comply with specific practices and procedures while working, and immediately comply with all instructions from the safety watcher.

**8. Occupational Health and Safety Officer:**

The person:

1. provides technical advise and assistance to the supervisors, to workers and to members of the health and safety committees.
2. assesses the hazards associated with identified confined spaces and completes the Confined Space Hazard Assessment Form
3. monitors atmospheric test results and record them on the entry permit. If the limits are exceeded, evacuate employees from the area immediately.

**9. Central Health and Safety Steering Committee:**

The Central Health and Safety Steering Committee must:

1. review the hazard assessment of all confined spaces; and
2. review these assessments systematically every year.

***CONFINED SPACE HAZARD ASSESSMENT FORM (Appendix 1)***

This form shall be completed by the Health and Safety Officer for all identified confined spaces in the Board.

The Assessment Form shall include:

- The location and description of the confined space.
- A list of potential hazards.
- Recommended control measures for each hazard.
- Baseline atmospheric readings in the confined space.
- Anticipated work that may be required to be performed in the area and the general frequency of such work.
- Date of the assessment.
- A unique confined space number shall be assigned to the described space. This number will be recorded on all forms and other documentation associated with work that is done in this confined space.

- The information on the Assessment Form will be reviewed every three years.

### ***CONFINED SPACE ENTRY PERMIT (Appendix 2)***

The Supervisor shall prepare a Confined Space Entry Permit each time work is to be done in a confined space. (Appendix 2)

The Entry Permit shall include:

- The record number and location of the confined space.
- A description of the work to be done.
- A description of the hazards and corresponding control measures. The Confined Space Hazard Assessment form for the confined space shall be the basis for this section. However, the work to be done may create other specific hazards that shall also be listed.
- The time period for which the permit applies.
- A list of the equipment required for entry.
- If hot work is required, adequate provision for the hot work and related control measures.
- The names and assigned duties of the workers directly involved with the work.
- Issuance of the Confined Space Checklist ( Appendix 3) and Confined Space Entry Log. (Appendix 4)

### ***CONFINED SPACE CHECKLIST (Appendix 3)***

The Confined Space Checklist shall be filled out by the Person in charge at the worksite.

This document shall confirm that all identified hazards have been eliminated and any other steps required assuring the safety of the worker entering confined space have been completed.

The Health and Safety Officer shall record all required data pertaining to atmospheric testing.

### ***CONFINED SPACE ENTRY LOG (Appendix 4)***

The entry and exit times for each worker entering the confined space shall be recorded.

### ***RECORDS RETENTION***

All documentation pertaining to work done in a confined shall be returned to the Maintenance Supervisor. These records shall be kept for a minimum of one year or such longer period as required to assure that two sets of records for each type of confined space are available.

**Safe Work Practice for Entry into a Confined Space**

**All confined spaces in which work is to be done must be isolated from all possible hazards.**

**10. Lockout**

Lockout and tag out procedures must be used whenever work is performed in a confined space.

**11. Blanking-Off**

All confined spaces in which work is to be done must be isolated from all possible hazards. The following are procedures for blanking-off supply lines:

- a) Disconnect and blank off all lines connected to tanks, including supply, exit-vent and overflow lines. This prevents the entry of material by a leak in, or by the accidental opening of, a valve.
- b) Disconnect and cap or blank off drains or overflow lines (if they extend into a sewer from which steam or vapour could be sent back to the tank, if they connect to other equipment or if they extend to a remote location).

**12. Electrical Equipment**

Electrical tools and equipment must be grounded, be certified by the CSA or by the Electrical Safety Authority and, where required, be explosion-proof. All equipment must be protected by a ground-fault circuit interrupter. Welding electrodes must therefore be well insulated.

**13. Tanks**

Septic tanks and water tanks shall be completely pumped out prior to entry. The interior of septic tanks shall be washed down.

**14. Air Purging**

The confined space shall be purged with fresh air prior to entry and whenever possible, on a continuous basis while work is being performed in the confined space.

**15. Personal Protective Equipment**

The choice of proper personal protective equipment depends not only on the nature of individual tasks, but also on hazard exposure. Equipment can range from chemical goggles, safety glasses, hard hats, gloves and safety footwear to full body covering. If there is a risk of exposure to toxic substances, suitable respirators, fit-tested for every user, must be provided.

**16. Hazard Assessment**

The assessment must be in writing and **MUST** consider

- a) possible hazards stemming from the design, location or use of the confined space;
- b) potential hazards during the work inside the space;
- c) combustible dust;
- d) other hazardous atmospheres;
- e) harmful substances;
- f) hazardous energy, engulfment, entrapment and other hazardous conditions.

**17. Training**

Employees must acquaint themselves with, and become proficient in, first-aid techniques and CPR. A properly equipped and approved first-aid kit, left in the care of a competent first-aider, must be available at the work site.

Employees must never undertake a rescue or enter a confined space for a rescue unless they have been trained specifically for rescue work and trained to use respirator protection and other safety equipment. All employees participating in the confined-space program must be trained according to the standards set by the board.

**18. Corrective Eye Wear**

If corrective eye wear must be worn, the following procedures apply:

- a) Glasses must have head straps or, if a full-face respirator is used, appropriate inserts that do not interfere with the seal of the face piece.
- b) Glasses must be cleaned with anti-fogging agent.

**19. Personal Cleanliness**

Personal cleanliness is an excellent means of protection after leaving a confined space; soap and clean water must be available for washing hands and face. Waterless antiseptic hand cleaners are also effective and may be used in conjunction with proper hand washing procedures. Tyvek coveralls must be worn over personal clothing at all times and be disposed of at the end of the job or sooner if they become extremely soiled.

**20. Confined Space Hazard Assessment and Identification**

All confined spaces must be inventoried and assessed by the Health and Safety Officer and later reviewed by the Central Health and Safety Steering Committee.

- a) **Assessments** must be documented on an assessment form. (Appendix 1) The Committee must review these assessments annually.

**Entry Steps**

**21. Pre-Site**

**Step 1**

The supervisor must provide the person in charge with written instructions indicating the task/job to be performed and any know hazards (Permit System)

**Step 2**

The person in charge must brief all employees involved on the task/job to be performed and all known hazards.

**Step 3**

The person in charge, with the assistance of the employees involved, must ensure that all required safety equipment, tools and other equipment are on site and in proper working condition.

**22. Pre-Entry**

**Atmospheric monitoring of confined spaces**

Before employees enter confined spaces that may contain dangerous gases, vapours, mist, fumes or dust, insufficient or excessive oxygen, or extreme temperatures, air testing must be carried out. Test

results shall be recorded on the Confined Space Checklist, making sure to log each sample analysis in the permanent record.

Direct reading instruments must be used to detect flammable gases, vapours or oxygen deficiency. Specific tests for toxic materials must also be done when applicable.

The atmosphere must be evaluated before each entry and then continuously while work is underway.

**Step 4**

The person in charge must ensure that the confined space checklist and, if required, the hot work permit is completed and signed.

**Step 5**

The person in charge must ensure

- (i) that all lock out and blanking-off requirements are implemented as applicable;
- (ii) that all hazardous residue in spaces has been cleaned, flushed or purged;
- (iii) that all pre-entry atmospheric monitoring has been conducted; and

**Step 6**

(i) The person in charge must ensure that all employees have the appropriate personal protective equipment that is required for the job.

**Step 7**

The person in charge must ensure that the appropriate emergency support equipment is available. This equipment may include:

- (i) a man-lift;
- (ii) a first-aid kit;
- (iii) a fire extinguisher;
- (iv) communication equipment;
- (v) ventilation equipment, and
- (vi) any other emergency equipment required for the entry.

**Step 8**

The Safety Watcher stands at the entrance to the confined space.

***During Entry***

**Step 9**

Before allowing workers to enter a confined space, the Safety Watcher must ensure that:

- (i) all entrants are wearing an appropriate safety harness attached to a lifeline that
  - a) is attached to a secure anchor outside the confined space;
  - b) protects entrants from the hazard for which it is provided and does not itself create a hazard; and
  - c) comes equipped, where reasonably practical, with a mechanical lifting device.
- (ii) the confined space checklist is complete and posted;
- (iii) the atmosphere is monitored and recorded to ensure it does not contain the hazards identifiable by the monitoring device;
- (iv) the appropriate emergency support equipment is in place;
- (v) contact with the entrants can be maintained at all times; and

While entrants are in the confined space, the Safety Watcher must:

- (i) continuously ventilate the area as required, by either extraction or blowing;
- (ii) continuously monitor and record the confined space atmosphere and environment;
- (iii) ensure that all tools entering the confined space are appropriate, given its potential hazards;
- (iv) from outside the confined space, dispense equipment and materials to employees in the confined space, as required.

For the duration of the confined space entry, the entrants must:

- (i) wear and use all personal protective clothing and equipment provided;
- (ii) perform only those tasks authorized by the permit;
- (iii) follow all instructions received from the Safety Watcher, and

- (iv) immediately report any abnormalities.

**Post Entry**

**Step 10**

Upon completion of the work in the confined space, the person in charge must verify that:

- (i) all employees have left the confined space;
- (ii) all equipment and devices taken into the confined space have been removed;
- (iii) all accesses have been properly secured;
- (iv) all lockout devices engaged for the entry have been removed and set to the normal position; and
- (v) a copy of the checklist and entry log are returned to the supervisor.

**23. Ventilation**

If a hazardous atmosphere exists or is likely to exist in a confined space, the confined space must be ventilated or purged or both, as required, before entry.

Mechanical ventilation must be provided, if required, to keep the atmosphere safe in the confined space during work.

The procedure for venting a confined space depends on the design of the space itself and on the activity to be conducted. Fresh air may be blown into the confined space, or air can be extracted or drawn from the space (negative pressure ventilation).

If negative-pressure ventilation is used it must be:

- (i) with an explosion-proof extractor, vent the area by placing the venting tube at the lowest possible point of the confined space; the confined space will be under negative pressure
- (ii) ventilating must continue throughout the worker's time in the confined space.

**24. Exposure to noise hazards in confined spaces**

When a worker has to enter a confined space where noise levels will likely exceed the 90 dBA limit, he or she must wear hearing protection that reduces noise by at least 25 dBA.

**25. Hot work in confined spaces**

Welding or cutting in a confined space may cause fumes, gases, vapours or dust to accumulate or may deplete or over-enrich the oxygen content. In addition to the normal confined space procedures, the following precautions must be taken during welding or cutting in a confined space:

- a) Never take compressed cylinders or welding machines into the confined space; instead:
  - (i) leave the equipment outside, making sure it does not impede entry or exit, and
  - (ii) ensure all cylinders are properly secured.
- b) Shut down hot work equipment when it is not in use.
- c) If gas welding is stopped for a reasonable length of time:
  - (i) close the torch valves;
  - (ii) shut off the supply at the cylinders, and
  - (iii) remove the torch and hoses from the space.
- d) Never try to repair or disconnect a torch in the confined space.
- e) If arc welding is stopped for a reasonable length of time:
  - (i) remove all electrodes from their holders;
  - (ii) place the holders where accidental contact cannot occur, and
  - (iii) disconnect the machine from its power source.

**26. Atmospheric Hazards**

If an explosive, toxic or oxygen deficient atmosphere develops, the confined space **SHALL BE EVACUATED IMMEDIATELY** and work shall not resume until the cause of the hazard has been corrected and all atmospheric parameters have returned to safe levels.

**27. Emergency and rescue procedures**

If an emergency requires the retrieval of employees from the confined space, the following procedures must be followed:

- a) If it's safe to do so, operate the retrieval system to remove the employees from the confined space.
- b) If the rescue is not possible, call 911.
- c) Assist rescue workers when they arrive.
- d) Perform first aid or CPR as necessary to stabilize victims and allow for their evacuation to a medical facility as quickly as possible.
- e) Secure the confined space for inspection and investigation.
- f) Advise the Health and Safety Officer and the immediate supervisor of the incident.
- g) Record the details of the emergency as soon as possible after the emergency has ended. Be precise and detailed about the events before, during and after the emergency.
- h) Accident reporting procedure:
  - (i) Employees must report all minor or serious injuries without delay to their immediate supervisor.
  - (ii) Supervisors must investigate all accidents; a critical injury shall be handled as required in Administrative Procedure 3852 - D.

**28. Confined space entry support equipment**

Though the entire list is not required at all times, the following equipment must be available to the supervisor so that he/she can select items for maximum safety during confined space work:

- a) portable venting unit, complete with hoses;
- b) CSA approved safety harnesses;
- c) safety ropes in various lengths;
- d) bucket and rope (to lower tools);
- e) personnel-lifting device with winch;
- f) first-aid kit;
- g) "lock out" and "tag-out"
- h) explosion-proof lighting;
- i) suitable personal protective equipment (gloves, glasses, boots, disposable coveralls);
- j) barriers and signs;
- k) ground-fault circuit interrupter;
- l) ladder of suitable length and construction;
- m) hand cleaners and paper towels; and
- n) other equipment appropriate for the task at hand.

Before every entry into a hazardous confined space, the person in charge must inspect, maintain and test for safety all of the equipment that will be used in connection with the entry. Before entry, employees must personally inspect the protective equipment or devices they use.

**APPENDICES**

- Appendix 1                    Confined Space Hazard Assessment Form**
- Appendix 2                    Confined Space Entry Permit**
- Appendix 3                    Confined Space Site Checklist**
- Appendix 4                    Confined Space Entry Log**

**February 2007**

CONFINED SPACE HAZARD ASSESSMENT FORM

Review every three years

School	Location	Description	Potential Hazards	Suggested Control Measures	Assessment Dates
			Oxygen Hazard:		
Hazard assessment readings: CO: _____ H2S: _____ O2: _____ % LEL: _____ Conducted by: _____ Signature: _____ Date: _____ Confined Space No. Issued: _____			Flammables:		
			Toxic Chemicals:		
			Mechanical Hazards:		
			Electrical Hazards:		
			Physical Hazards:		
			Other:		

Activities conducted in area:

Frequency:

## CONFINED SPACE ENTRY PERMIT

**Bluewater District School Board**

**Permit Number** \_\_\_\_\_

School: _____	Location: _____	Confined Space No: _____
Description of Work:		
YES	NO	HAZARDS AND CONTROL MEASURES FOR THE CONFINED SPACE
		Oxygen Level <19.5% or >23.0%
		Flammable >10% of LEL: Specify _____ _____
		Toxic chemicals: >TLV-TWA: Specify _____ _____
		Mechanical hazards: Specify _____ _____
		Electrical hazards: Specify _____ _____
		Physical hazards: noise, vibration, light, heat, cold, surfaces, entanglements Specify _____ _____
		Hot Work: Specify _____ _____

<b>Equipment required for Confined Space Entry</b>			
<input type="checkbox"/> Respiratory Protection <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Lifeline <input type="checkbox"/> Tripod <input type="checkbox"/> Personal lift <input type="checkbox"/> Tool bucket <input type="checkbox"/> Rescue equipment	<input type="checkbox"/> GFI <input type="checkbox"/> Lockout <input type="checkbox"/> Lighting <input type="checkbox"/> Ventilation	<input type="checkbox"/> Hearing protection <input type="checkbox"/> Head protection <input type="checkbox"/> Hand protection <input type="checkbox"/> Eye protection <input type="checkbox"/> Face protection
Person in charge: _____		Person(s) entering the space: _____	
Watcher: _____		Confined Space Site Checklist and Entry Log Issued:	
Emergency plan:			
<b>AUTHORIZATION:</b> I certify that the above information is both complete and accurate and that all participants have been briefed on the work to be completed.		<b>Maintenance Supervisor:</b> Name: _____ Signature: _____	

Issue Date: \_\_\_\_\_

Expiry Date: \_\_\_\_\_

Entry Date: \_\_\_\_\_

Anticipated End Date: \_\_\_\_\_

**CONFINED SPACE SITE CHECKLIST****School:** \_\_\_\_\_ **Location:** \_\_\_\_\_ **Permit Number:** \_\_\_\_\_

YES	NO	N/A	
			Participants have training for confined space entry.
			Participants have been briefed on potential hazards.
			Administrator/Head Custodian have been informed of potential service interruption.
			All hazard sources have been isolated, blanked or blocked with locks and tags.
			All energy sources have been locked out and tagged.
			All potential ignition sources have been eliminated.
			All tools and equipment have been checked and deemed in good repair.
			Confined space has been drained and washed and no longer contain potential hazards.
			Ventilation provides a good supply of fresh air.
			All emergency equipment is readily available (first aid kit, extinguisher, etc.)
			All required atmospheric testing has been completed and recorded.
			All additional permits have been issued (hot work, etc.)
			Area is secured and under supervision.
			Safety Watcher has been briefed and posted.

**ATMOSPHERIC MONITORING**

Test	Allowable units	Preliminary Results	Results	Results	Final Results
CO					
H2S					
O2					
% LEL					

Entry Date: \_\_\_\_\_ Time: \_\_\_\_\_

Exit Date: \_\_\_\_\_ Time: \_\_\_\_\_

Atmospheric monitoring conducted by:

Device (1) \_\_\_\_\_ Calibration date: \_\_\_\_\_ Calibrated by: \_\_\_\_\_

Device (2) \_\_\_\_\_ Calibration date: \_\_\_\_\_ Calibrated by: \_\_\_\_\_

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_

