

LOCATION OF WORK	WRITTEN BY:	APPROVED BY:	DATE	LAST REVISION
Schools in PTSD	Lorie Carriere	Gordon Howe	June 24, 2010	November 14, 2017

HAZARDS PRESENT	PERSONAL PROTECTION EQUIPMENT (PPE)	ADDITIONAL REQUIREMENTS
<ul style="list-style-type: none"> <li>• Sharp ceiling protrusions e.g. nails</li> <li>• Hot pipes overhead</li> <li>• Working alone hazards</li> <li>• Mould, dust, contaminants, damp soil, rodents, broken glass, nails, discarded pipe, metal, asbestos, etc.</li> <li>• Hazardous atmosphere, long standing water (H<sub>2</sub>S)</li> <li>• Power failure</li> <li>• Restricted egress</li> <li>• Obstacles (beams/ductwork/etc.)</li> <li>• Asbestos</li> <li>• Gas, sewer lines</li> </ul>	<ul style="list-style-type: none"> <li>• Safety glasses</li> <li>• Bumper cap or hard hat</li> <li>• Coveralls/Tyvek suit - if soil is wet</li> <li>• Work gloves</li> <li>• Safety harness (full body)</li> <li>• Dust mask/respiratory protection</li> <li>• Communication equipment</li> <li>• Flashlight</li> <li>• Multi gas detector</li> </ul>	<ul style="list-style-type: none"> <li>• Confined space entry training</li> <li>• Respirator Fit Testing</li> </ul>

**SAFE WORK PROCEDURE**

**IMPORTANT:**

All crawlspaces in the School Division have been assessed and categorized according to the level of risk. It is important to consider that the level of risk may increase due to the task being performed in the crawlspace. For example a "level 2" crawlspace may become a high hazard confined space due to fugitive emissions from welding or the displacement of oxygen. A high hazard confined space may be entered only by qualified and authorized personnel. **THIS SWP DOES NOT ADDRESS IDHL – IMMEDIATELY DANGEROUS TO HEALTH & LIFE - CONFINED SPACE ENTRY. PEMBINA TRAILS STAFF ARE NOT ALLOWED TO ENTER THESE TYPES OF SPACES. IF IN DOUBT DO NOT ENTER.**

All crawlspaces in the Division have been identified and permanently labelled at or near the point of entry. For example: Level 1 - Restricted Access Spaces. All potential hazards must be identified (or hazards that may be introduced into the confined space) must be listed. A crawlspace entry permit is also posted on the crawlspace entry door/hatch.

Only employees identified by Facilities & Operations will be allowed access into the crawlspaces. Example: custodians, trades, IT, and sub-contractors.

Contractors working in Crawlspaces on Divisional property must be informed of the dangers, be trained in confined space entry and comply with the requirements of the entry system. It is the responsibility of the supervisor who contacted the contractor to notify, verify training, brief, and provide a copy of this safe work procedure to any contractor working in a crawlspace in the Division. It is the contractor's responsibility to ensure all their staff are trained in CSE, inform all workers under his control and any subcontractors of specific crawlspace hazards. Briefings must be documented and records maintained.

**Note:** crawlspace entry permits must be kept for 5 years. Please forward completed permits to the Safety Officer.

**LEVEL 1: RESTRICTED SPACES - ENTRY PROCEDURES**

**IDENTIFIED HAZARDS:** Level 1 restricted spaces pose the lowest risk. You are able to walk (rather than crawl), egress is not restricted and the space typically has a full door. The space has adequate ventilation, there are no known atmospheric contaminants and the work activity will not create physical hazards or change the atmosphere within the space. Other hazards present in the space may include: low light, dust, high/low temperature, some dampness, or low ceiling height. The space may contain noise, asbestos, radon gas, animal traps, animal feces, standing water, steam etc. Atmospheric monitoring is still required.

Examples of a restricted spaces at Pembina Trails may include basements, rooftop HVAC enclosures, passages through ceilings, etc.

**Note:** Contractors or trades staff will require a separate pre-entry hazard evaluation form to be completed and submitted to the Pembina Trails supervisor/safety officer prior to entry. This is required to determine what additional hazards these workers may add to the space which may result in changes to entry procedures, PPE, ventilation, etc. All restricted spaces have the potential to become a confined space depending upon the work activity being carried out in the space.

**PROCEDURE:**

1. Prior to entering the crawlspace you must inform someone (secretary, head caretaker) that you will be entering and working in the restricted access space and how long you will be. The person you inform must be made to understand that if you do not return at the required time someone should be sent to find you.
2. Don all personal protective equipment required: e.g. Bump cap, safety glasses, work gloves, coveralls (if required), and a N95 respirator (if required). Ensure you have a flashlight, or another type of portable illumination, with you at all times.
3. Turn on the multi gas detector and complete the fresh air calibration. Secure the gas detector in a location on your person but away from your breathing zone. All spaces must have atmospheric monitoring every time you enter.
4. Print your name and the time on the "Entry Log" that is posted on the crawlspace entry door.
5. Open the door and turn on the lights. Perform atmospheric monitoring - test the air in the space at the entrance. If the gas detector alarms or shows levels of atmospheric hazards, do not enter the space. Contact your supervisor. Acceptable levels for entry:
  - Oxygen – 19.5% - 23%
  - CO – less than 25ppm (low alarm), short term exposure (15min) – 100 ppm; TWA (over 8hrs) – 25ppm
  - H<sub>2</sub>S – less than 1.0ppm (low alarm), short term exposure (15min) – 5ppm, TWA (over 8 hrs) – 10ppm
  - Flammables / Explosives – Lower explosive level 10%, upper explosive level 20%
6. Do not enter crawlspaces that have standing (black) water as the water may release hydrogen sulfide gas when disturbed. If standing water is present contact the maintenance shop. Someone will be assigned to pump out the water.
7. If the air sampling in step 5 is OK, enter the space to begin work. Complete your work and remove all debris and garbage. No combustible materials are allowed to be left / stored in a crawl space (fire code requirement).
8. **If the alarm sounds at any time the worker MUST leave the space immediately and call their supervisor. DO NOT turn off the gas monitor once you have exited the space.** Your supervisor will need to review the exposure information logged in the monitor. If it is turned off all information is lost.
9. Exit the crawlspace, sign out, close and secure the door. Remove personal protective equipment. Clean and store it appropriately. Check in with person you informed in step 1 and let them know all work has been completed in the crawlspace.

**LEVEL 2: CONFINED SPACE ENTRY PROCEDURES**

**IDENTIFIED HAZARDS:** Level 2 confined spaces pose all the same risks as Level 1 restricted spaces. However, access is restricted due to small hatch openings into the space. Egress is restricted due to a low ceiling, low pipes, physical obstacles, and ducting. Atmospheric conditions are typically normal. The space may contain noise, asbestos, radon gas, animal traps, animal feces, standing water, steam, high humidity, temperature extremes, mold, damp soil, etc. Atmospheric monitoring is always required.

Examples of confined spaces at Pembina Trails include crawl spaces, dust collection units, HVAC ducts, vessels such as boilers, manholes, etc.

**Note:** Contractors or trades staff will require a separate pre-entry hazard evaluation form to be completed and submitted to the Pembina Trails supervisor/safety officer prior to entry. This is required to determine what additional hazards these workers may add to the crawl space which may result in changes to entry procedures, PPE, ventilation, etc.

**PROCEDURE:**

1. All level one controls must be implemented. In addition, a two person entry is mandatory.
2. Don all personal protective equipment: full body harness, bump cap, safety glasses, coveralls (if required), a P-100 respirator (if required), Tyvek suit (if required), work gloves or disposable protective gloves (latex, nitrile gloves, etc.), if necessary. Ensure you have a flashlight or other means of portable illumination with you at all times.
3. An entry supervisor must be stationed outside the hatch and must remain there until all work has been completed.
  - Radio/voice contact between the entry supervisor and the person entering the crawl space must be maintained at all times. If radio contact is not possible then voice contact must be maintained at all times.
  - The entry supervisor is responsible to maintain contact with the entrant at all times and to contact emergency services in the event of an incident.
  - **At no time is the entry supervisor allowed to enter the crawlspace or leave the hatch unattended.**
4. If your crawl space entrance is located:
  - behind a closed door - place the "**confined space entry in progress**" sign and chain across the opening to the space to prevent anyone from entering while the hatch is open.
  - in a classroom, hallway or other space accessible by students/staff/ public - place the **portable guardrail** around the entrance to prevent unauthorized access.
5. Turn on the multi gas detector and complete the fresh air calibration. Secure the gas detector in a location on your person but away from your breathing zone.
6. Print your name, date and the time on the "Confined Space Entry Permit" that is posted on the crawlspace entry hatch.
7. Open the hatch and turn on the lights. Ensure the crawlspace hatch cannot be closed while you are in the crawlspace. Place a lockout on the hasp so that it cannot be locked shut.
8. Test the air in the space at the entrance. Lower the gas monitor into the space and continue to test the air. If the detector alarms at any time, do not enter the space. Contact your supervisor. Document the gas monitor reading on the permit.

Acceptable levels for entry:

  - Oxygen – 19.5% - 23%
  - CO – less than 25ppm (low alarm), short term exposure (15min) – 100 ppm; TWA (over 8hrs) – 25ppm
  - H<sub>2</sub>S – less than 1.0ppm (low alarm), short term exposure (15min) – 5ppm, TWA (over 8 hrs) – 10ppm
  - Flammables / Explosives – Lower explosive level 10%, upper explosive level 20%

9. Do not enter crawlspaces that have standing (black) water as the water may release hydrogen sulfide gas when disturbed. If standing water is present contact the maintenance shop. Someone will be assigned to pump out the water and test the air. If entry is required while significant water is present in the space a personal flotation device will be required and all electricity to the space must be locked out. This must be done with the supervisor in attendance.
10. You must keep in constant contact with the “entry supervisor” at all times.
11. **If the alarm sounds at any time the worker MUST leave the space immediately and call their supervisor. DO NOT turn off the gas monitor once you have exited the space.** Your supervisor will need to review the exposure information logged in the monitor. If it is turned off all information is lost.
12. If the air sampling in step 7 is OK, enter the space to begin work. Complete your work and remove all debris and garbage. No combustible materials are allowed to be left / stored in a crawl space (fire code requirement).
13. Exit the crawlspace and remove the lockout device on the door / hatch. Close the door and secure it in place.
14. Immediately upon exiting the hatch, remove your tyvek, booties, gloves and respirator (if required) and dispose of into separate garbage. Proceed to the closest washroom and wash your hands and face. If a half mask respirator was used, clean and store it appropriately.
15. Sign out of the crawlspace by entering your exit time and peak gas monitor readings on the permit form. Using the down arrow on the gas monitor, press the button twice to reach the peak exposure page.
16. Remove the signage from the door and/or guardrails and store for future use.

**RESCUE:**

1. **Self-Rescue** – Entrant is physically and mentally capable of exiting the space without assistance. To be used if the gas detector alarm/ventilation alarm activates or signs and symptoms of exposure to a hazard are recognized and an evacuation is required. Immediately upon exit notify your supervisor and Safety Officer.
2. If self-rescue is not possible, call 911. Notify the workers supervisor and the Divisional Safety Officer. **DO NOT enter the space to attempt rescue.**

**LEVEL 3: HIGH HAZARD CONFINED SPACE ENTRY PROCEDURES**

**IDENTIFIED HAZARDS:** Certain confined spaces at Pembina Trails are particularly hazardous and are subject to stricter requirements that prohibit entry into the spaces except under very specific conditions. These confined spaces are called “high hazard confined spaces”. Examples of this at Pembina Trails would include partial drains for the sewer or other Level 2 confined spaces where contractor work has introduced atmospheric hazards and may contain an immediately dangerous to life and health (IDLH) atmosphere. **An IDLH confined space may be entered only by qualified, trained and authorized personnel and rescue procedures and equipment must be in place. Pembina Trails staff are not allowed to enter these spaces. A separate entry permit is required. Contractors must obtain an entry permit from their company supervisor. Once completed a copy must be submitted to the Divisional Safety Officer.**

**Personal Protective Equipment Required:**

Hard hat/bumper cap, full body harness, safety footwear, safety glasses, work gloves, ventilation equipment, coveralls or tyvek suit, multi gas detector, tri-pod or davit arm, supplied air respirator, rescue procedures, entry permit, and rescue team.

**Two Person Entry is Mandatory:**

An entry supervisor must be stationed outside the hatch and must remain there until all work has been completed. The entry supervisor must have a means of communication with the person entering the crawl space. Communication must be maintained at all times. You will be required to wear a harness and lifeline. If radio contact is not possible then voice contact must be maintained. Rescue team is required to be on site and located at the entry point.

**PROCEDURE:**

1. Set up the tri-pod or davit arm.
2. Print your name, entry supervisor’s name, date and time on your company’s “Entry Permit”. Complete all the necessary sections and have all staff sign off on the permit.
3. Test the air quality with the multi gas detector directly above the hatch. Document the information on the entry permit.
4. If air quality is normal then open the hatch and secure the access hatch / door to prevent accidental closing. Set up the ventilation equipment and ventilate the space. Ventilation must be continuous.
5. Don your PPE and harness. Ensure that your lifeline is long enough that it will reach from the hatch opening to your work area. Attach the tri-pod or davit arm’s life line to the back of your harness. The entry supervisor is required to operate the tri-pod or davit arm while the worker enters the space.
6. Test the air quality with the multi gas detector by lowering it into the space. Document the information on the entry permit. If no alarm sounds the worker may enter but must have the gas detector on his person at all times. If the gas detector shows signs of hazardous atmospheric contaminants the worker must evacuate the space. Additional hazard assessment and or ventilation will be required. Please contact the Divisional Safety Officer prior to proceeding.
7. A second gas monitor must be at the hatch with the entry supervisor. The entry supervisor will be tasked with periodically monitoring the air quality at the hatch entrance. Document all information directly onto the entry permit.
8. Take a flashlight (intrinsic) or other type of portable illumination. Conduct the required work. Remove all debris and garbage. No combustible materials are allowed to be left / stored in crawlspace.

9. **If the alarm sounds at any time the worker MUST leave the space immediately and call their supervisor.**
10. If the alarm sounds and the worker does not exit, the entry supervisor must initiate the non-entry rescue plan by first calling 911 and then retracting the cable on the tripod or davit arm. If the entry supervisor is unable to rescue the worker. A full entry rescue must be attempted by a rescue team. The entry supervisor **MUST NOT ENTER** at any time.
11. After work has been completed, lock access hatch / door to prevent unauthorized entry.
12. Complete the entry permit and provide a copy to the divisional Safety Officer.

**Note: A separate entry rescue procedure must be created by the contractor prior to entering.**

#### **REGULATORY REQUIREMENTS:**

- WS&H Act W210, Section 4, 5, 7, 7.1
- Mb. Regulations 217/2006, Part 15, Sections 15.1 – 15.3
- Confined Space Entry - Code of Practice

**This Safe Work Procedure will be reviewed anytime the task, equipment or materials change and at least every 3 years.**