

# SAFE WORK PRACTICES

## CONFINED SPACES *Page 1 of 3*

*\*This information does not take precedence over OH&S. All employees should be familiar with the Saskatchewan Employment Act and the OH&S Regulations.*

**General:** The OH&S Regulations (1996) provide the following definitions:

**Confined Space:** *“an enclosed or partially enclosed space that: (i) is not primarily designed or intended for human occupancy, except for the purpose of performing work; and (ii) has restricted means of entrance and exit”*

**Hazardous Confined Space:** *“a confined space that is or may become hazardous to a worker entering the confined space due to” (i) the design, construction or atmosphere of the confined space; (ii) the materials or substances in the confined space; (iii) the work activities or processes used in the confined space; or (iv) any other conditions relating to the confined space”*

Workers often have to work in confined spaces (such as manholes, utility vaults, mechanical rooms, pumping stations, attics, bell holes, vessels, sheet metal housings, etc.). Confined spaces can be difficult and dangerous to work in. They may be hard to get into and out of. Most importantly because of poor ventilation, the air may be toxic, flammable or lacking oxygen. OH&S Regulations (Part XVII) require that specific steps be taken prior to entry into a confined space. The procedure (for both confined space and hazardous confined space) is outlined in the Regulations.

### 1. Test for Hazardous Atmosphere:

- Before entering a confined space make sure the air is safe. It cannot be tested by sight or smell. Air testing instruments can determine if it is toxic, flammable or lacking oxygen.
- Some vapors are lighter than air and rise. Others are heavier than air and settle near the floor. It is very important to test the top, middle and bottom areas of a confined space when testing the air.
- If the air is toxic, flammable or lacking oxygen, ventilate the confined space. It should be retested thoroughly before workers enter the space. Ventilation should continue as long as anyone is working in the space.

### 2. Lack of Oxygen: Oxygen level in a confined space can be too low as a result of:

- Open flames from heaters or other devices.
- Cutting, welding, brazing.
- Operation of gas engines.
- Chemical reactions (such as rusting).
- Fermentation.
- Too much of another gas (such as carbon dioxide, etc.).

If oxygen is tested at less than 19.5% of the air a supplied air respirator is required.

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### 3. Flammable Atmosphere:

- Vapors, gases and dust can be flammable. A spark or flame in a flammable atmosphere could cause an explosion.
- If the oxygen level is high (above 21%) flammable materials such as hair and clothing burn violently.
- Never use pure oxygen to ventilate a confined space. It is a fire hazard. Use ordinary breathing air (provided by a fan or from compressed gas cylinders or a compressor) to ventilate the space.
- Propane gas used for soldering and other operations is heavier than air and is flammable and explosive. Make certain that the brass connectors for the piping do not leak.

### 4. Toxic Atmosphere:

- Most liquids, vapors and dusts in a confined space are hazardous.
- Materials stored or used in a confined space can create toxic fumes.
- Work done in a confined space (such as welding or cleaning) can cause toxic fumes.
- Work done *near* a confined space can cause toxic fumes to accumulate in the space.

### 5. Physical Hazards:

- **Temperature Extremes** – A confined space can be extremely hot or cold. If it contains steamed air allow the space to cool before entering.
- **Engulfment Hazards** – Loose material stored in bins or hoppers (grain, sand, coal, etc.) can engulf and suffocate you. The loose material can crust or “bridge over” in a bin, but then break loose when someone walks on it.
- **Noise** – A confined space amplifies noise that can damage your hearing.
- **Slick, Wet Surfaces** – Many confined spaces have surfaces that can cause slips and falls. Wet surfaces increase the chance of electric shock.
- **Poor Lighting** – Confined spaces are usually not well lighted. Lights brought into the space should be explosion proof (Class 1, Division 1 equipment).

### 6. Lockout and Tag Out: Lockout and tag out any equipment that could be a hazard such as:

- Electrical systems and equipment.
- High pressure air and fluid lines.
- Mechanical equipment with hazardous moving parts.
- Chemical transport piping systems.

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Follow this procedure when locking out equipment:

- Prepare the equipment for shutdown.
- Shut down the equipment.
- Lock out the switch and tag it.
- Make sure no energy remains (bleed air lines, ground capacitors, test electrical circuits, etc.).

7. **Electrical Sources, High-Pressure Air & High-Pressure Fluid Lines:** In a confined space any energized or moving equipment is a possible hazard. Make sure all electrical systems and equipment are locked out and tagged (See "Lock Out/Tag Out Job Procedure").

8. **A Safety Watch for Hazardous Confined Space:** When someone is working in a hazardous confined space, a safety person must be assigned. Make sure the safety person cannot be overcome by fumes. The safety person must be trained in:

- How to detect hazardous air in a confined space.
- Symptoms of over exposure to toxic and oxygen deficient air.
- When to end a confined space operation.
- How to handle a confined space emergency.

The safety person must:

- Be in constant contact with the worker(s) inside.
- Make sure the worker(s) inside are not overcome by polluted air.
- Maintain and monitor the air testing equipment and ventilation equipment.
- Use the emergency response plan if an emergency develops.

9. **Confined Space Emergency Rescue:** All workers involved in confined space operations must be trained in confined space emergency and rescue procedures before the operation begins. In hazardous situations workers may be required to wear a safety harness in a confined space so that they can be rescued in case of an emergency.

10. **Confined Space Entry Permit:** A confined space entry permit is a checklist of activities to be done before entering a confined space. The entry permit specifies the safety procedures to be followed and typically includes the following information:

- air test results
- methods used to reduce or eliminate the hazard
- personal protective equipment required for workers in the confined space
- air testing required while the space is being used
- training required for workers in the confined space
- an emergency rescue plan to be used during the confined space operation

***The OH&S Regulations require that a written "hazardous confined space entry plan" be developed prior to entering a hazardous confined space (Reg. 272).***