

# Entering confined spaces

By Heather Prime

**C**onfined space accidents are rare, but they can have deadly consequences — fast. Workers entering an oxygen-deficient confined space can lose consciousness within a couple of breaths. Without an adequate oxygen supply, a worker can die in less than four minutes. At this rate of speed, well-meaning co-workers often fall victim too — more than 60 percent of fatalities are would-be rescuers.

## Where the danger lies

A confined space is an enclosed or partially enclosed space that is not intended for human occupancy and has a restricted entrance or exit. Confined spaces can be found in almost any workplace and come in all shapes and sizes, from aircraft wings to silos, tanks, and utility vaults. Even a trench can be a confined space under certain conditions.

All hazards found in a regular workplace can be found in a confined space, but in a confined space — where the restricted entrance or exit makes rescue difficult — an added element of danger exists. Three of the more common hazards of working in a confined space are:

- **Poor air quality** — Confined spaces may contain hazardous air contaminants, including colourless, odourless gases that can be detected only with testing. Sometimes gases such as nitrogen displace oxygen and make the space oxygen-deficient. Very low oxygen levels can impair brain function, cause heart failure, and death may result in a matter of minutes.
- **Chemical exposure** — Through skin contact, ingestion, or inhalation of

“bad” air, workers may be exposed to hazardous chemicals.

- **Fire hazard** — The presence of flammable gases or vapours exposes workers to the risk of explosion or fire.

## Program minimizes risks

The margin for error is small when working in confined spaces, but experience shows that fatalities are preventable when employers and workers implement a Confined Space Entry



Program conforming with Part 9 of the Occupational Health and Safety Regulation. This program should include:

- Assigning responsibility for administration of the program to a person or persons adequately trained to do so. All workers entering a confined space also require training in the relevant hazards and necessary precautions.
- Identifying and assessing the hazards of each confined space or group of similar spaces.
- Written safe work procedures for entry into and work in confined spaces that address where applicable:
  - Entry permits for high-hazard confined spaces
  - Locking out energy sources and isolating adjacent piping
  - Verifying precautions and testing the atmosphere prior to entry
  - Cleaning, purging, venting, or inerting the atmosphere, as appropriate
  - Ventilating the atmosphere
  - Standby persons to check on the well-being of workers
  - Rescue procedures
  - Lifting
  - Personal protective equipment
  - Coordinating work activities

### Entry permits at high-hazard sites

All confined spaces are not created equal; some are even more dangerous than others. The Regulation requires the responsible supervisor to complete and sign an entry permit before workers enter a confined space with one of the following characteristics:

- A high-hazard atmosphere, such as one depleted of oxygen
- Requires lockout of energy sources or isolation of adjacent piping that contains or has contained a harmful substance
- Presents a hazard of entrapment or engulfment in loose materials such as grain, sand, or gravel

Each entry permit must identify at least the following:

- Confined space and the work activities to which it applies
- Workers inside the space
- Required safe work procedures
- Length of time the permit is valid for

Completed and signed entry permits should be posted at each designated entry point to the confined space, or at a minimum of one entry point when the identification at other entry points includes up-to-date information on whether it is safe to enter and all workers authorized to enter are informed of the posted permit's location.

To ensure the continuing safety of workers, entry permits must be reviewed and updated as necessary, and all affected workers must be informed of changes to work activity or required precautions. The responsible supervisor is required to re-authorize and sign a permit when there is:

- A change in the work crew
- A shift change
- A change of the responsible supervisor

The employer must keep a copy of all signed entry permits for at least one year.

### For more information

There are a number of resources available to help you work safely in confined spaces:

#### WCB resources

- Occupational Health and Safety Regulation, Part 9, Confined Spaces, online at <http://regulation.healthandsafetycentre.org/s/Part9.asp>
- Guidelines to the Regulation, Part 9, online at <http://regulation.healthandsafetycentre.org/s/GuidelinePart9.asp>
- Your occupational safety or hygiene officer, or the Prevention Information Line (604 276-3100 in the Lower Mainland, toll-free 1 888 621-7233)

#### Other resources

- Canadian Centre for Occupational Health and Safety web site at [www.ccohs.ca/oshanswers/hsprograms/confinedspace\\_intro.html](http://www.ccohs.ca/oshanswers/hsprograms/confinedspace_intro.html)
- U.S. National Institute for Occupational Safety and Health web site at [www.cdc.gov/niosh/injury/traumaconf.html](http://www.cdc.gov/niosh/injury/traumaconf.html)
- U.S. Occupational Safety and Health Administration web site at [www.osha-slc.gov/SLTC/confinedspaces/index.html](http://www.osha-slc.gov/SLTC/confinedspaces/index.html)

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