

Chapter 12

WORKING IN CONFINED SPACES

‘Sewers, tanks, vaults, windowless rooms, trenches, pits, stairwells, closets and even ductwork are all classic examples of potentially confining spaces.’

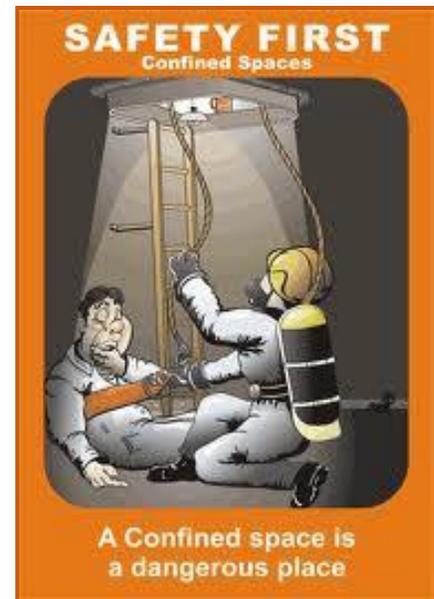
Working in a confined space can be dangerous ... even *deadly*. A ‘confined space’ has one or more of the following characteristics:

- Has entry or exit opening that is limited or restricted.
- Contains known or potentially hazardous atmospheric conditions.
- Offers risk of entrapment or engulfment; any space where a serious health hazard may exist or develop.
- Any space where rescue by others would be difficult.

Confined Spaces

Some examples of a potentially confined space are: sewer, tank, vessel, vault, windowless room, trench, pit, chlorine room, stairwell, smoke stack, tower, bin, reservoir, dike, ventilation, exhaust duct or even by extension, any room where an open flame or pilot light could cause ignition. To be within the law, employers must develop and use codes of practice for confined space entry. Therefore all Hight employees are encouraged to:

- Do a hazard assessment before commencement of work to identify potential confined space risks.
- For each confined space identified, write a "code of practice" which is specific to the particular situation and site. The code of practice defines, in easy to understand language, all the procedures workers are required to follow. It includes: a detailed description of the confined space; identification of all hazards; specification of the personal protective gear required; training requirements; ventilation needs; testing needs; detailed procedures for access and egress; special communication requirements; emergency contingency plans in the event of accident; and well-defined procedures for reducing or eliminating the hazards.
- A carefully prepared and communicated emergency response plan, backed up by an effective training program, is an essential part of the code of practice. Write, test and implement your plan.
- Conduct a pre-job meeting to ensure the hazards and procedures are understood by all workers involved. Every worker involved in the confined space entry must attend this meeting.



- A Safe Work Entry Permit is required before work can begin. Obtain and post the permit at the access/egress points of the confined space.
- Clearly identify the permit space. Post warning signs (e.g. 'DANGER, CONFINED SPACE'); put up barriers and/or signage around confined space area.
- Identify and train **watchpersons**. They perform an essential role. Their responsibilities include:
 - Participating in communication system testing at the start of the job and after every work break.
 - Ensuring emergency response procedures are posted and required emergency response equipment is operational and available at the work location.
 - Monitoring all life support systems and air monitoring devices.
 - Maintaining constant communication with the workers in the confined space.
 - Never leaving the entry/exit location without a trained watchperson in place while workers are in the confined space.

‘Dozens of workers are injured or killed each year while working in confined spaces. An estimated 60% of the fatalities are among would-be rescuers.’



- Ensuring access points are posted appropriately with warning signs to prevent unauthorized entry.
- Communicating any change in working conditions to the workers and support help.
- Controlling access to ensure only authorized and trained workers are in the confined space.
- Knowing at all times how many people are in the confined space (log entry and exit).
- Ensuring only trained and properly equipped rescue workers enter the confined space in the event of an emergency.

- Never, ever, enter a confined space to rescue workers without wearing and using the personal protective gear provided for this purpose and having a back-up person outside the confined space.
- Workers must sign the back of the permit, meeting minutes or safe work procedure to indicate they have been trained to work in the confined space and understand the safe work practices, procedures and protocols related to the confined space.
- Job conditions change from those discussed at the pre-job meeting, review, revise and re-issue the safe work permit. Inform all affected workers of the changed conditions and any changes in operating or emergency protocols put into effect. Document the meeting.
- Refer to the confined space entry training and safety program manuals for detailed guidance and instructions.
- Remember, every confined space is unique.
- Supervisors and workers must take the development and implementation of confined space work procedures very seriously ... *your lives may depend on them.*

Atmosphere/Gas Monitoring

- Be safe, always monitor gases prior to, continuously during, and prior to any re-entry into a confined space.
- Fact: The order of testing a confined space is very important.
 - A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere.
 - Combustible gases are tested for next, because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors.
 - If tests for toxic gases and vapors are necessary, they are performed last.
 - Vapor Density < 1 rises
 - Hydrogen 0.1; Methane 0.6; Acetylene 0.9; Air 1.0
 - Vapor Density > 1 sinks
 - Hydrogen Sulfide 1.2; Benzene 2.7; Gasoline 3.5
 - *Source: WESTWAY HSE Training, Feb. 2003*