



Loss Control Insights

Confined Space Entry

Confined spaces are work areas that an employee can bodily enter and perform assigned work, but that have limited or restricted means for entry or exit and are not designed for continuous employee occupancy. Confined spaces include, but are not limited to, sewers, underground vaults, tanks, storage bins, pits and diked areas. Employees working in confined spaces can be exposed to health and safety hazards including entrapment or asphyxiation due to inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section; engulfment and asphyxiation in a material contained in the space; exposure to hazardous atmospheric conditions; working in close proximity to dangerous machinery with moving parts; or other health hazards. If a confined space has one or more of these characteristics, OSHA considers it to be a "permit required confined space".

Confined spaces hazards face public employees on a regular basis. Rescues from confined spaces can be dangerous for firefighters and other rescue workers, who are at risk from the same hazards that disabled the workers being rescued. Sanitation workers who enter confined underground spaces, such as sewer manholes and pumping stations, may be overcome by sewer gas or other hazardous fumes.

OSHA requires employers to evaluate their workplaces to determine whether their premises include any permit required confined spaces. If the workplace contains such spaces, the employer must inform exposed employees of the existence, location, and danger posed by the permit spaces. A sign reading "DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" satisfies this requirement. If employees are not allowed to enter the confined space, the employer must take effective actions to prevent employees from entering the space.

If employees will enter permit required confined spaces as part of their jobs, the employer must develop and implement a written program for entry. The standard requires employers to consult with employees and their authorized representatives on all aspects of program development and implementation. Appendix C to OSHA's Permit Required Confined Spaces Standard provides sample written programs, including a sample program addressing sewer entry.

Some of the major topics to be addressed by the employer's written program are:

- The measures used to prevent unauthorized entry to permit required confined spaces
- The measures used to identify and evaluate the hazards of a permit required confined space before employee entry
- The means, procedures and practices used by the employer to ensure that conditions are, and remain, safe for entry into a permit required confined space

The equipment used to ensure that the space is, and remains, safe for entry; the personal protective equipment provided to employees when engineering and work practice controls are not adequate; rescue equipment maintained by the employer, unless provided by rescue services; and other equipment maintained for safe entry into, work in, and rescue from permit spaces

- Testing and monitoring procedures used to ensure that conditions are, and remain, safe during operations
- Procedures for providing at least one attendant outside the permit required space during the entry, to continuously monitor the employee(s) inside
- Descriptions of the responsibilities of all persons playing a role in the entry, including the person entering, attendants, entry supervisors, and those performing testing; procedures for training those employees about their responsibilities; and individual certificates of training (including the employee's name, signature or initials of trainer, and dates of training) for all employees who complete training
- Procedures for rescuing entrants from permit spaces and/or and procedures for summoning outside rescue and emergency services to perform rescues, and for preventing unauthorized persons from attempting rescue
- Procedures for preparing, issuing, using and canceling entry permits for each entry into a permit required confined space, in compliance with the requirements of the standard
- Procedures for coordinating entry operations with employees of a different employer working in the permit space at the same time
- Procedures for concluding the entry and closing the confined space after operations are completed
- Procedures for ensuring that affected employees are trained prior to assignment to any duties related to permit required confined space entry.

Employers often hire contractors to perform work that involves permit required confined spaces. The standard requires employers of contractors to:

- Advise contractors that the workplace contains permit required confined spaces and describe the hazards that led to this classification;
- Advise the contractor that its employees may only enter these spaces if the contractor follows a permit space program complying with the OSHA standard;
- Tell the contractor about any precautions or procedures the employer has implemented for employee safety in and around the permit spaces where the contractor will be working;
- Coordinate entry operations with the contractor if both the employers and the contractors will be working in or near permit required confined spaces
- Debrief the contractor at the conclusion of the entry about the permit space program followed, and any hazards confronted or created in the permit required confined space during the operation.

Employers whose employees enter permit required confined spaces may be exempt from the requirement to implement a permit-required confined space program and entry permit system; require certain duties of entrants, attendants and entry supervisors; and designate and evaluate rescue services if it can develop monitoring and inspection data to prove that:

- The only hazard posed by the permit required confined space is an actual or potential hazardous atmosphere, and
- Continuous or forced air ventilation alone is sufficient to maintain the space safe for entry.

Employees may only enter such a confined space if the employer:

- Guards the opening to the permit required confined space to avoid accidental falls and injury
- Prior to employee entry, tests the atmosphere in the space with a calibrated direct reading instrument for oxygen content, flammable gases and vapors and potential toxic air contaminants, in that order.
- Continuous forced air ventilation from a clean source is used to eliminate any hazardous atmosphere before employees enter the space, and is continued until leave the space.
- The atmosphere is monitored periodically to ensure that the ventilation is preventing the accumulation of hazardous substances
- If hazardous atmosphere is detected, all employees leave the space immediately; the space is evaluated to determine how the atmosphere developed; and measures are taken to protect employees prior to another entry.