

Confined Space – Permit Required Quiz



QUESTION

What are the ways to control hazards in confined space'

ANSWER

These include engineering controls, administrative controls and personal protective equipment. Engineering controls are designed to remove the hazard while administrative controls and personal protective equipment try to minimize the contact with the hazard.

WHY IS IT RIGHT

CONFINED SPACE DEFINITION

OSHA's definition:

- Is large enough for an employee to enter fully and perform assigned work;
- Is not designed for continuous occupancy by the employee; and
- Has a limited or restricted means of entry or exit.

BELOW / ABOVE GROUND EXAMPLES

Confined spaces can be below or above ground. Confined spaces can be found in almost any workplace. A confined space, despite its name, is not necessarily small. Examples of confined spaces include silos, vats, hoppers, utility vaults, tanks, water supply towers, sewers, pipes, access shafts, truck or rail tank cars, aircraft wings, boilers, manholes, pump stations, digesters, manure pits and storage bins. Ditches and trenches may also be a confined space when access or egress is limited. Barges, shipping containers and fish holds are also considered as possible confined spaces.

PERMIT ' REQUIRED

A permit-required confined space has one or more of these characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material with the potential to engulf someone who enters the space;

- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or
- Contains any other recognized serious safety or health hazards.

A **permit-required confined space** will contain all of the above, **PLUS** one or more of the following:

- a substance that has the ability to engulf or asphyxiate the entrant
- a potentially hazardous atmosphere
- spaces with inwardly converging walls within the space or a floor that slopes downward, tapering to a small cross-section
- contains any other serious safety or health hazard

Once a confined space has been identified as having any one of the above four potential hazards, an employer should identify it as such via either safety signs or another effective means of communication. Any time an employer has workers that will be entering confined spaces, there needs to be a **Written Program** developed that outlines and instructs on the proper safety procedures for working around and occupancy of these confined spaces.

The following information is what OSHA wants to see on an entry permit for confined spaces:

1. The confined spaces to be entered;
2. The purpose of entry;
3. The date and authorized duration of the permit;
4. The authorized entrants within the permit space, by name or some other means that will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;
5. Names of attendants;
6. Supervisor's name, with a space for the signature or initials of the supervisor who originally authorized entry;
7. The hazards of the confined spaces to be entered;
8. The measures used to isolate the permit space and to eliminate or control any occupational hazards before enter (i.e. purging, flushing, or ventilating the confined space as well as lockout and tagging of equipment);
9. Acceptable entry conditions;
10. The results of any initial and periodic tests performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed;
11. The rescue and emergency services that can be called on and the means (such as the equipment to use and the numbers to call) for reaching those services;
12. The communication procedures used by authorized entrants and attendants to maintain contact during the entry;
13. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be used in the confined spaces;
14. Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety; and any additional permits, such as for hot work, that have been issued to

authorize work in the permit space.

Any employer who allows employee entry into a permit space must develop and implement a written program for the space. Among other things, the OSHA standard requires the employer's written program to:

- Implement necessary measures to prevent unauthorized entry;
- Identify and evaluate permit space hazards before allowing employee entry;
- Test atmospheric conditions in the permit space before entry operations and monitor the space during entry;
- Perform appropriate testing for the following atmospheric hazards in this sequence: oxygen, combustible gases or vapors, and toxic gases or vapors;
- Establish and implement the means, procedures and practices to eliminate or control hazards necessary for safe permit space entry operations;
- Identify employee job duties;
- Provide and maintain, at no cost to the employee, personal protective equipment and any other equipment necessary for safe entry and require employees to use it;
- Ensure that at least one attendant is stationed outside the permit space for the duration of entry operations;
- Coordinate entry operations when employees of more than one employer are working in the permit space;
- Implement appropriate procedures for summoning rescue and emergency services, and preventing unauthorized personnel from attempting rescue;
- Establish, in writing, and implement a system for the preparation, issue, use and cancellation of entry permits;
- Review established entry operations annually and revise the permit space entry program as necessary; and
- Implement the procedures that any attendant who is required to monitor multiple spaces will follow during an emergency in one or more of those spaces.

WHY IS EVERYTHING ELSE WRONG

HAZARDS ASSOCIATED WITH WORKING IN CONFINED SPACES

Critical Mass

Two Rules:

- All hazards encountered in the regular workplace may occur in a confined space.
- These hazards will be much more severe in an area where entry and exit are limited.

Examples of Hazards

- **Poor air quality:** ' There may be an insufficient amount of oxygen for the worker to breathe. The atmosphere might contain a poisonous substance that could make the worker ill or even cause the worker to lose consciousness. Natural ventilation alone will often not be sufficient to maintain breathable quality air.
- **Hazards from asphyxiants** ' Simple asphyxiants are gases which can become so concentrated that they displace oxygen in the air (normally about 21 percent). Low oxygen levels (19.5 percent or less) can cause symptoms such

as rapid breathing, rapid heart rate, clumsiness, emotional upset, and fatigue. As less oxygen becomes available, nausea and vomiting, collapse, convulsions, coma and death can occur. Unconsciousness or death could result within minutes following exposure to a simple asphyxiant. Asphyxiants include argon, nitrogen, or carbon monoxide.

- **Chemical exposures** ' Skin contact or ingestion as well as inhalation of 'bad' air.
- **Fire hazard:** ' Explosive/flammable atmosphere due to flammable liquids and gases and combustible dusts which if ignited would lead to fire or explosion.
- **Process-related hazards** ' Residual chemicals, release of contents of a supply line.
- **Physical hazards** ' noise, heat/cold, radiation, vibration, electrical, and inadequate lighting.
- **Safety hazards** ' Moving parts of equipment, structural hazards, engulfment, entanglement, slips, falls.
- **Explosion**
 - You can't smell or see some explosive gases so you might not know they are in the air. A spark or other ignition source might result in an explosion. Many dusts and chemicals can also explode.
- **Trapped, Crushed, Or Buried**
 - Loose or unstable materials might fall on you and trap or bury you. A liquid, a hazardous gas, or steam might flow into the space. You might get caught in a piece of equipment that starts moving.

The fundamental bed rock of confined space safety is never to enter a confined space without proper training. Establish if the work is really necessary or if it can be done in another way that avoids the need to enter.

You are in the 'control position if you are equipped with proper training and personal protective equipment. In addition, written procedures and an entry permit system are essential.

PROTECTION GUIDELINES

Take atmospheric precautions Take atmospheric precautions.

- The atmosphere should be tested before you enter ' by trained people using the right equipment. The confined space should be ventilated until it tests safe, and possibly afterwards. If this is not possible, the right respiratory protection should be worn

Lock out energy sources.

- Lines carrying gases, liquids or solids should be disconnected or blocked off before you enter. Valves and electrical circuits should be locked out and tagged.

Remove possible sources of ignition.

- Use non-sparking tools and lighting devices in a potentially flammable atmosphere.

Be fully prepared before entry.

- Make sure you are wearing the required personal protective equipment (PPE) including a hardhat, safety-toed footwear, gloves and your breathing apparatus

Wear a lifeline.

- The lifeline should be connected from your body harness to a winch outside the confined entrance so you can be pulled out in case of emergency.

Trained and equipped personnel

- Standing by outside the confined space, for communication and rescue if necessary

Overview of Prevention/Controls

The traditional hazard control methods found in regular worksites can be effective in a confined space. **These include engineering controls, administrative controls and personal protective equipment.** Engineering controls are designed to remove the hazard while administrative controls and personal protective equipment try to minimize the contact with the hazard.

However, often because of the nature of the confined space and depending on the hazard, special precautions not normally required in a regular worksite may also need to be taken. The engineering control commonly used in confined spaces is mechanical ventilation. The Entry Permit system is an example of an administrative control used in confined spaces. Personal protective equipment (respirators, gloves, ear plugs) is commonly used in confined spaces as well.

However, wearing of PPE sometimes may increase heat and loss of mobility. Those situations should be carefully evaluated. When using PPE, always use as part of a PPE program and be sure to evaluate all possible hazards and risks associated with PPE use.