29 CFR 1910.146 - Permit-required confined spaces•Standard Number: 1910.146•Standard Title: Permit-required confined spaces•SubPart Number: J•SubPart Title: General Environmental Controls

Confined Spaces

Preparation

1. Read Applicable Background information and related Company Policy Chapter.
2. Make _____ Copies of this Lesson Plan for Personnel
3. Make Transparency, procure transparency pens, etc.
4. Coffee, tea, snacks

Material

1. Personal Protective Equipment

Objective

By the end of this session, personnel shall be able to:

- Define what a confined space is.
- Give examples of confined spaces.
- Describe Permit-Required Confined Space Policy.
- Describe what a Hazardous Atmosphere is.
- Identify hazards associated with entry into a confined space.
- Describe responsibilities of the person entering a confined space, the attendant, and the supervisor.
- Describe Rescue and Emergency Services
- Describe Training requirements
- Describe Outside Contractor Responsibilities

Background

Many workplaces contain confined spaces not designed for human occupancy which due to their configuration hinder employee activities including entry, work and exit. Asphyxiation is the leading cause of death in confined spaces. The hazards encountered and associated with entering and working in confined spaces are capable of causing bodily injury, illness, and death to the worker. Accidents occur among workers because of failure to recognize that a confined space is a potential hazard. It should therefore be considered that the most unfavorable situation exists in every case and that the danger of explosion, poisoning, and asphyxiation will be present at the onset of entry.

Notes

Lesson

What is a Confined Space?

The OSHA standard presents requirements for work in confined spaces. As defined by OSHA a confined space has the following characteristic:

· Is large enough and so configured that an employee can bodily enter and perform assigned work.
· Has limited or restricted means for entry or exit.
· Is not designed for continuous employee occupancy.

Examples of a Confined Space

They can be:

· Storage tanks.
· Silos, storage bins, pits, pipes, tunnels and shafts.
· Pressure vessels.
· Boilers.
· Physical plant sumps.
· Underground utilities.
· Storm sewers.

Permit-Required Confined Space Policy

Prior to entry into any permit-required confined space, the employee's supervisor will issue a permit that specifies the location, type, and duration of the work to be done, and the date. The permit will certify that the supervisor has evaluated all existing hazards and that necessary protective measures have been taken for the safety of workers. It will provide documentation of the atmospheric testing that has been done. It will assign entry and attendant duties to specific persons.

Before issuing an entry permit, the employee's supervisor will be responsible for the following:

- Identify all hazards and potential hazards associated with the confined space, such as the danger of explosion, asphyxiation, toxic gases/fumes, engulfment or entrapment, electrical or mechanical hazards, etc.
- Isolate the space from potential hazards, if possible, to provide for safe entry.
- Purge, inert, flush, ventilate to eliminate atmospheric hazards.

Notes

- Provide external barriers and warning signs.
- Perform pre-entry oxygen, flammable gas and toxicity air tests. All test results are to be recorded on the entry permit. If potential hazards cannot be isolated, continuous monitoring is required. If potential hazards can be isolated, periodic monitoring is required.
- Provide at least one trained attendant outside of each confined space that will be entered.
- Ensure that rescue and emergency services and equipment are in place as noted in this policy.
- Ensure that all required equipment is provided, maintained and properly used. This includes air monitoring equipment, forced air ventilation equipment, communications equipment, personal protective equipment (PPE), lighting, external barriers and warning signs, ladders, and rescue equipment.

If hazardous conditions are detected during entry, employees will immediately leave the space and the supervisor will determine the cause of the hazardous atmosphere and take corrective actions before allowing re-entry.

This definition for a “permit” required space compares with that for a “non permit” confined space which is one that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard that can cause death or serious physical harm.

Confined spaces require special procedures to ensure that they are safe before people enter or work in them. OSHA requires that a sign must be posted at every permit required confined space and should state:

"Danger - Permit-Required Confined Space, Do Not Enter"

Additionally, a "Confined Space Entry Permit" must be filled out before any worker can enter a permit required confined space.

Notes

What is a Hazardous Atmosphere?

There are three main hazards that are identified on the confined space entry permit that need to be determined before entry. These hazards must be determined prior to entry using special air monitoring devices.

· **Oxygen Deficiency:** Oxygen levels are measured using an Oxygen Meter. OSHA says that a confined space must have at least 19.5% in order to enter without respiratory protection. If there is less than 19.5% oxygen, supplied air respirators must be worn.

· **Flammable and Combustible Gases:** Flammable and combustible gases are measured with a Combustible Gas Indicator or Explosion Meter and concentrations are given in percent of the Lower Explosive Limit (%LEL). OSHA says that you can not enter a confined space if flammable levels are 10% LEL or greater.

· **Toxic Gase**s: The type of toxic gas will depend on what is in the confined space. Typically the toxic gases inside a confined space can be measured with a specific meter (H_2S, CO, etc.).

OSHA says that you can enter a confined space if the levels of the toxic gas are less than the PEL. If the toxic gas levels exceed the PEL, the space must be ventilated or appropriate respiratory protection and PPE must be used.

Other hazards found in a confined space, which should be eliminated before entry, include:

· Moving parts inside the space.
· Electrical equipment.
· Process lines feeding the space.
· Pressurized atmospheres.
· Noise.
· Heat or cold

Lock Out/Tag Out procedures should be followed, and all electrical equipment, moving parts, and process lines should be locked and tagged out prior to entry into the confined space. Secure mechanical moving parts within a confined space with latches, chains, chocks, blocks, or other devices. Disconnect belt, chain drives, and mechanical linkages on shaft-driven equipment.

Notes

Depressurize and disconnect contaminant/process supply lines and provide a blank or blind in the line.

Certain work being performed in a permit required confined space could cause the atmosphere in the space to change. Examples of this are welding, drilling, grinding, or sludge removed. Air monitoring of the confined space should be conducted on a continuous basis throughout the period of entry. Additionally, if workers leave the confined space for a significant period of time, such as for lunch or other breaks, the atmosphere of the confined space should be re-tested before any reentry into the space.

Personnel Responsibilities

OSHA has established duties for those people authorized to enter a confined space, the attendants or safety watch, and the entry supervisors.

The person entering the space must:

- Know the hazards.
- Properly use equipment.
- Communicate with the attendant.
- Alert the attendant if problems arise.
- Exit the space when appropriate.

The attendant must:

- Know the hazards.
- Be aware of behavioral changes in entrant.
- Maintain communication with all entrants in the space.
- Maintain a count of entrants.
- Remain outside the confined space.
- Maintain communication with entrants.
- Monitor activities inside and outside the space.
- Summon rescue services.
- Prevent unauthorized personnel from entering space.
- Perform non-entry rescue.

The supervisor's duties include:

- Know the hazards.
- Verify entry permit.
- Terminate entry and cancel permit as needed.
- Verify rescue services are available.
- Remove unauthorized individuals.
- Ensure entry operations are consistent with the permit.

Notes

Emergency and Rescue Procedures

If proper protective measures are taken to eliminate and control any possible hazards in the confined space (i.e., ventilation, purging, monitoring, lock out/tag out, etc.), rescue operations should not be necessary. Nonetheless, the Company will be prepared for the worst case scenario.

An attendant for the confined space will have access to a telephone and know the proper procedure for alerting the proper personnel in the event of an emergency, including the fire department, paramedics, police, and others as necessary.

Provisions will be made and equipment provided to ensure timely extraction of an unconscious or injured worker from the confined space. This will include a body harness with a lifeline attached to a tripod and rescue winch. Under no circumstances is the attendant to enter the space to effect rescue; rescue operations must be left to trained personnel.

Training Requirements

Employees involved with permit-required confined space work will be trained to assure the knowledge, understanding, and skills necessary for the safe performance of their duties. Foremen will be trained in the identification and evaluation of confined space hazards and in the proper precautions to be taken to assure safe entry and work in confined spaces. Employees entering confined spaces will be trained in the hazards and potential hazards involved and how to protect themselves from those hazards. They will be trained to never enter a confined space until a permit is issued and they have been authorized to enter by the foreman. Attendants will be trained in their duties and responsibilities and the actions to be taken in the event of an emergency.

Employees will receive a written certification following their training to document that they have been properly trained in their respective duties and the hazards and safety precautions involved in confined space entry.

Notes

Outside Contractor Responsibilities

When the Company arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:

- Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the OSHA regulations;
- Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;
- Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;
- Coordinate entry operations with all contractors (including on-site contractors), when any combination of host employer personnel and/or contractor personnel will be working in or near permit spaces, and
- Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

- Obtain any available information regarding permit space hazards and entry operations from the host employer;
- Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required; and
- Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

Notes

Closure

The Occupational Safety and Health administration (OSHA) has estimated that at least 62 fatalities and 12,643 injuries and illnesses occur annually due to confined space hazards. Implementing and maintaining an effective confined space entry program can prevent these deaths, injuries and illnesses.

This PRCS Program describes the measures necessary to (1) prevent unauthorized entry into permit-required confined spaces, (2) identify and evaluate permit space hazards, and (3) implement the means, procedures, and practices necessary for safe entry operations.

What questions do you have?

Notes