



Confined Space Training

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Objectives

- **To understand and recognize a confined space,**
- **To understand the difference in a permit required confined space and a non-permit required confined space,**
- **To increase knowledge of hazards in confined spaces,**
- **To identify appropriate roles required when working within a confined space,**
- **To understand rescue procedures.**

OSHA Regulation...

Title 29 CFR part 1910.146

- **Effective April 15, 1993**
 - **According to OSHA...Confined Spaces result in:**
 - more than 63 deaths per year
 - 12,800 injuries per year
- **NIOSH discovered that:**
 - **25% of victims were rescuers**

Factors Related to Confined Space Injuries and Deaths

- **Lack of pre-incident plans & SOPs**
- **Insufficient training on procedures**
- **Lack of knowledge about hazards**
- **Lack of air testing**

29 CFR 1910.146



**CONFINED
SPACE
ENTRY**

Confined Space Standard

All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

What is a Confined Space?

A space that:

1. Is large enough and so configured that an employee can enter bodily and perform work;
2. Has limited or restricted means of entry or exit;
3. Is not designed for continuous human occupancy.

Examples of Confined Spaces:

- Tanks
- Manholes
- Boilers
- Furnaces
- Sewers
- Silos
- Hoppers
- Vaults
- Pipes
- Trenches
- Tunnels
- Ducts
- Bins
- Pits

Signage

- DANGER -- PERMIT-REQUIRED
CONFINED SPACE, DO NOT ENTER



Potential Hazards in Confined Spaces

- **Oxygen Deficiency**
 - <19.5% or >23.5% oxygen concentration
- **Combustibles**
 - Methane
 - Hydrogen
 - Acetylene
 - Propane
 - Dust
- **Toxic Materials**
 - Carbon Monoxide
 - Hydrogen Sulfide
 - Cadmium Vapor
 - Welding fumes
 - Corrosives
- **Electricity**
- **Mechanical Hazards**
 - Mixers
 - Crushers

Entry

- The act by which a person intentionally passes through an opening into a permit required confined space.
- Any part of the body passing through the opening is considered entry.



IDLH

- IMMEDIATELY DANGEROUS TO LIFE OR HEALTH
- Any condition which poses an immediate threat to the health or life of an entrant, or;
- Would cause irreversible adverse health effects, or;
- Would interfere with an individual's ability to escape unaided from a permit space.

Two Options for Entering Confined Spaces:

- Permit-required confined space entry
 - For hazardous or potentially hazardous confined space work
- Non-permit confined space entry
 - For non-hazardous confined space work

Non-Permit Confined Space

- A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Permit-Required Confined Space

- A Permit-Required Confined Space is a confined space that has one or more of the following characteristics:
 - Contains or has the potential to contain a hazardous atmosphere;
 - Contains a material that has the potential for engulfing an entrant;
 - Has an internal configuration such that an entrant could become trapped or asphyxiated; or
 - Contains any other serious safety or health hazard.



Categorizing Work Space

- * Space large enough to enter &;
- * Limited or Restricted entry or exit &;
- * Not designed for continuous worker occupancy.

NO

Not a confined Space

YES

Confined Space

Hazardous Atmosphere

Or

Engulfment Hazard

Or

Configuration Hazard

Or

Any other recognized serious hazard

YES

**Permit-
Required
Confined
Space**

NO

**Non
Permit
Required
Space**



Roles

Entrant

The employee who will physically enter the confined space to perform the work.

Attendant

The employee who remains outside the confined space and monitors the entrant(s); guards the space against unauthorized entry; warns the entrants of any unusual conditions; and summons the rescue personnel if needed.

Entry Supervisor

The employee responsible for coordinating the entry into the confined space.

Responsible Person

The person directly responsible for the work being performed in the confined space. This can be any employee qualified by training and experience.

Permit-Required Confined Space Entry Procedure

- Isolate the space
- Conduct briefing
- Complete permit
- Test the atmosphere
- Enter the space

Isolate the Space from all hazards

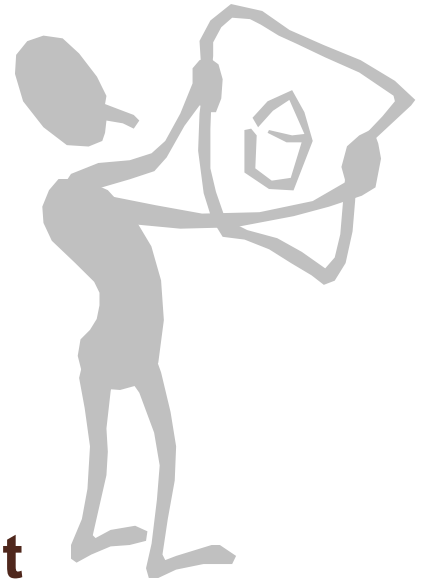
- **Close Valves**
 - Double block & bleed, or
 - Blank flange
- **Empty the Space**
 - Depressurize, vent & drain
- **Lockout/Tagout Equipment**
 - Electrical sources
 - Rotating/reciprocating parts
 - Hazardous materials
- **Clean residue from the space**

Conduct Briefing

- Entire crew must attend
 - Attendants, entrants, entry supervisor
- Review hazards of entry and work
- Review PPE
- Review procedure for contacting rescue
 - verify rescue available
- Complete permit

Complete Entry Permit Form

- Permit must be correctly and completely filled out prior to entry.
- Permit must be activated by Entry Supervisor's signature to be valid.
- No entry is allowed without a valid permit.
 - Permit is your ticket to the game!
- Permits are valid for up to 8 hours.
- When work is completed, the permit should be returned to the Safety Supervisor.
- Cancelled permits must be kept on file for at least one year.



Atmosphere Testing Shall Be Performed:

- **Prior to every entry when the space is vacant;**
- **At least hourly for permit-required confined spaces.**
- **More frequently, if conditions or suspicions warrant.**

Acceptable Atmospheric Entry Conditions

Combustible Dust Concentration:

Vision greater than 5 feet



Enter the Space and Proceed with work:

- **An attendant shall be posted near the entrance for the duration of the work. He/she shall be in constant communication with the entrants while the job is in progress.**
- **All entrants shall sign the sign in log when entering the space and sign out when exiting.**
- **The attendant shall maintain the permit and sign in log for the duration of the work.**

When the Job is Done:

- **Remove all personnel, tools, and debris from the space. Sign off the log.**
- **Close the space.**
- **Cancel the permit.**

Permit Availability

- **Posted outside opening for:**
 - **Entrants to inspect**
 - **Observations by attendant**
 - **Ensure that it has been signed (authorized)**
 - **Ensuring that pre-entry testing has been completed**

Remember: The permit is the ticket to the game and the SOPs are the rules that we play by.

Contractor Confined Space Entry

- Contractors must be informed of the hazards within the space
- Contractors must follow their own established confined space entry procedure and use their own permit forms
- Contractors must supply their own attendants
 - One attendant is acceptable for multiple companies' entrants
- Contractors must review entry after completion of job

Attendant Responsibilities

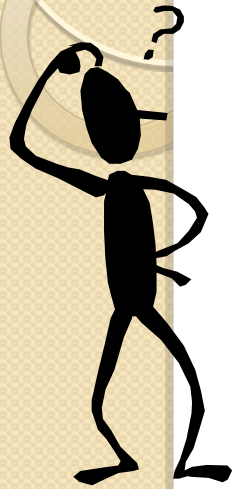
- **To monitor entrants during the job and during entry & exit to help insure their safety.**
 - The attendant may not abandon his post for any reason while personnel are in the space unless relieved by another qualified attendant.
- **To monitor atmospheric conditions in the space prior to and during entry.**
- **To control access to the confined space.**
- **To summon emergency assistance as needed.**
- **To assess hazards in and around the space, and take action on the same.**
- **To keep records of confined space work, such as personnel entry/exit, etc.**

Entrant Responsibilities

- **To assure that the space has been adequately isolated, emptied, or otherwise made safe for entry.**
- **To immediately exit a space, without question, upon word of the attendant, no matter what the reason.**
- **To follow all safety rules and procedures that apply to the job.**
- **To be familiar with the work to be performed and the procedures that apply to the job.**
- **To use the appropriate PPE whenever necessary.**



Supervisor Responsibilities



- To assure adequate protection is provided to the entrants by verifying adequate lockout/tagout and that all hazards are securely isolated.
- To support the attendant's authority in controlling access to a confined space.
- To verify that all personnel have exited prior to closing the space.
- To assure that all personnel involved are aware of the hazards associated with the space.
- To assure that rescue services are available prior to entry.



Atmospheric Hazards

Known hazards could include:

1. Oxygen deficiency
2. Oxygen enrichment
3. Hydrogen Sulfide
4. Carbon Monoxide
5. Explosive Environments (methane)
6. Chemical-specific

Meter Review



Confined Space Training

- Questions?

