

## Confined Space Entry

- OSHA background
- Definitions
- Program
- Contractors
- Permit
- Rescue
- Training
- Stories

## OSHA must prove

- Exposed employee
- Serious hazard
- Employer knowledge
- Feasible method to abate hazard

More than one employer may be cited for a condition that violates an OSHA standard

- **Determine whether the employer is...**
  - creating,
  - exposing,
  - correcting, or
  - controlling employer

## Do you have an effective safety and health program?

- Do you have clear rules and expectations?
- Do employees understand the rules?
- Do you have an effective process to discover deviations from expectations?
- Do you have an effective enforcement program?

## Fatality in sanitary sewer in Ohio

- **Middletown maintenance worker was involved in routine inspection of the sewer line when he died.**
- **Three firefighters who tried to rescue the victim were overcome and taken to the hospital.**

## Some period of time later...

- **Tests showed leaking nitrogen lines contaminated air in a sewer system.**

## We must convince everyone that they need to...

- Identify all of the potential hazards associated with confined space entry.
  - You will be on an island
- Ensure suitable steps are developed to control all potential hazards.
  - The OSHA standards can save a life
- Practice and evaluate your ability to respond to possible emergency situations
  - This could never happen

## A Confined Space is...

- Large enough and so configured that an employee can bodily enter and perform assigned work.
- Limited or restricted means of entry or exit.
- Not designed for continuous human occupancy.
  - Must meet all three requirements.

## A confined space is not...

- A small place that you can only get your head or arm into.
- The standard is not intended to address all locations that pose an atmospheric hazard

## A permit-required confined space has...

- Potential to contain a hazardous atmosphere.
- Material that has the potential to engulf the entrant.
- An internal configuration that an entrant could be trapped or asphyxiated by inwardly converging walls.
- Any recognized serious safety or health hazard.
  - It is a PRCS if it meets any of the conditions.

## A non-permit space is...

- 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.
- A non-permit space is not always a non-permit space.
- There once was a company that declassified all dry open pits.

## What is limited or restricted?

- Pits 3-4 feet deep
- Ladder access
- Porthole
- Non-standard doors

## The first step

- Evaluate workplace for confined spaces
  - determine potential hazards
- Post “Danger” signs or any other equally effective means inform of:
  - Existence
  - Location
  - Danger posed by the confined space.

## Typical permit-required confined spaces

- Tanks
- Sewers
- Pits
- Hoppers
- Vaults
- Boilers

## The written confined space entry program

- Prevent unauthorized entry.
- Identify all hazards.
- Develop procedures.
- Provide equipment
- Air monitoring.
- Provide an attendant.
- Multiple space entry procedures.
- Designate roles.
- Develop rescue procedures.
- Procedure for permits.
- Multiple employer procedure.
- Procedure for concluding entries.
- Review of program for deficiencies.
- Review of permits annually.

## 1910.146(L) - Employee participation

- To ensure employee involvement in the confined space program development and implementation
  - *(1) Employers shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by paragraph (c) of this section.*
- The contents of the confined space program is left up to the employer.

## Roles for entry

- Entry supervisor
- Entrant
- Attendant
- Rescue and emergency services

## Host employers shall...

- Inform the contractor that entry must comply with the OSHA **confined space entry** standard.
- Apprise the contractor of the **hazards** identified and experience.
- Apprise the contractor of **any precautions** or procedures that they must follow when in or near permit spaces.
- Coordinate entry operations with the contractor.
- **Debrief** the contractor at the conclusion of the entry operations regarding the procedures and hazards.

## Each contractor shall:

- Obtain any available information regarding permit space hazards and entry operations from the host employer.
- Coordinate entry operations with the host employer.
- Inform the host employer of the confined 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.

## People die in confined spaces because...

- Do not recognize the hazards
- Do not eliminate the hazards
- Overcome by emotion

## Recognize the hazards

- Physical
- Mechanical
- Rotting vegetation
- Rust inside of a tank
- Carbon monoxide
- Carbon dioxide
- Gasoline
- Sources outside the space
- Thermal – steam line

## the alternate procedures

- [1910.146\(c\)\(5\)\(i\)](#)
- An employer whose employees enter a permit space need not comply with paragraphs (d) through (f) and (h) through (k) of this section, provided:
  - the only hazard posed by the permit space is a potential hazardous atmosphere
  - continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry
  - The employer develops monitoring and inspection data that supports the theory

## The Permit

- Space
- Purpose
- Date and duration
- Names of entrants
- Names of Attendants
- Name and signature of entry supervisor
- Hazards of the space
- Measures to isolate the space
- Acceptable entry conditions
- Monitoring results with time and initials
- Means for summoning rescue and emergency services
- Communication procedures
- Equipment for entry
- Additional permits

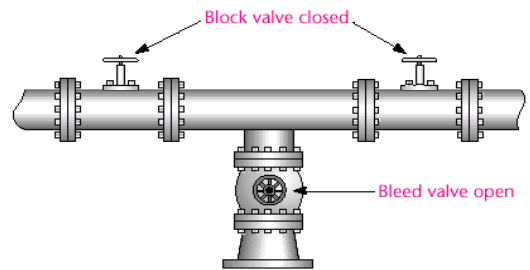
## Isolation

- Process used to protect against the release of energy and material into the space.
- lockout of all sources of energy
- blocking or disconnecting all mechanical linkages
- misaligning or removing sections of lines, pipes, or ducts
- double block and bleed system
- blanking or blinding

## Some elements of your lockout program

- Machine specific procedures
- Employee proficiency
  - Training
- Periodic inspections

## How do your employees isolate the gas line?



Double block and bleed

# Verify

The most important test

## When does entry begin?

- Entry begins when any part of the entrants body breaks the plane of the entry porthole.
- Soy bean oil tank

## Testing conditions in the confined space

- Determine if acceptable entry conditions exist before entry
- Test in the following order:
  - Oxygen - some monitors will not function without adequate oxygen
  - Combustible gases and vapors – fire hazard is immediate
  - Toxic gases and vapors. Determine if acceptable entry conditions exist before entry
- Do not enter to complete tests.

## Equipment

- Testing and monitoring equipment
- Ventilation equipment
- Communication equipment
- Personal protective equipment
- Lighting equipment
- Barriers and shields
- Equipment for safe entry and egress
  - ladders
  - fall protection
- Rescue and emergency equipment

## Training

- Employees must acquire the understanding knowledge, and skills necessary for the safe performance of assigned duties.
- Signs and symptoms of exposure.
- How to use equipment.
- Recognition of warning signs.
- Verify all procedures and equipment is in place.
- Verify rescue services are available.
- Detect prohibited conditions.
- Communication.
- Prevent unauthorized entry.

## Duties of entry supervisors

- Know the hazards that may be faced during entry
  - the mode, signs, symptoms, and consequences of exposure
- Verifies
  - All tests specified by the permit have been conducted
  - All procedures and equipment are in place
  - Checks that all of the appropriate entries have been made on the permit
  - Endorses the permit and allows entry to begin
- Verifies that rescue services are available and that the means for summoning them are operable

## Rescue

- Each member shall practice simulated rescue operations every 12 months from representative spaces.
- Must be trained in CPR and first aid.
- Entrants shall use a full body harness to facilitate rescue.
- Evaluation of rescue service.

## Rescue from confined spaces

- the preferred time for successful rescue is 4 minutes.
- Brain damage or death will result if the victim is without oxygen for longer than 4 minutes.

## Rescue preferences

- Self-rescue
  - Hazard identified
- Non-entry rescue
  - Equipment for retrieval
- Entry rescue
  - Prepared to risk their life
  - Tremendous skill and practice

## Evaluate rescuer's ability to respond in a timely manner

- Evaluate rescue service's
  - ability
  - proficiency with rescue-related tasks and equipment
  - function from the particular permit space types of spaces

## Review of the confined space entry program

- Review all of the canceled permits within 1 year
- Revise the program, to ensure that employees are protected from the hazards.

## Take home message...

- Identify all of the potential hazards associated with confined space entry.
- Ensure you develop suitable steps to control all potential hazards.
- Practice and evaluate your ability to respond to possible emergency situations

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