Confined Spaces

- 29 CFR 1910.146
- 29 CFR 1926.21(b)(6)
Objectives

In this course, we will:

- Identify confined spaces in general industry and the construction industry
- Identify the difference between a confined space and permit-required confined space
- Determine if a hazard exists within the confined space
- Discuss responsibilities for the entrant, attendant and entry supervisor
- Identify rescue options

1910.146 and 1926.21(b)(6)
Definition of Confined Space 1910.146(b)

- **General Industry**
  - 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; and
  - Is not designed for continuous employee occupancy
Confined Spaces

- Storage tanks
- Manholes and sewers
- Grain storage bins
- Boilers
- Ducts
- Tank cars

1910.146 and 1926.21(b)(6)
Confined Spaces

- Sewers
- Utility vaults
- Pipelines
- Equipment and machinery
- Tunnels
- Open top spaces (>4 feet)
Confined Space Hazards

- Oxygen-deficient/enriched atmospheres
- Flammable atmospheres
- Toxic atmospheres
- General/physical (noise, entrapment, engulfment, temperature)
- Mechanical (moving parts)
- Electrical
Controlling Confined Space Hazards

- Locking out moving parts
- De-energizing electrical parts or wiring
- Blocking steam pipes and product in-feeding pipes
- Draining or pumping out liquid contents
- Air monitoring and ventilating
Confined Spaces in General Industry

Confined Space Standard – 1910.146

- Contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces.
  
  » Does not apply to agriculture, construction, or shipyard employment.
Permit-Required Confined Space

- Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:
  - Hazardous atmosphere
  - Engulfment hazard
  - Internal configuration (inwardly converging walls, sloping floors)
  - Recognized serious safety or health hazard
Permit Space Entry

- If workplace contains permit spaces, employer shall inform exposed employees by posting signs or other equally effective means.

1910.146(c)(2)
Permit Space Non-Entry

- If employer decides its employees will not enter permit spaces, employer shall take effective measures to prevent employees from entering permit spaces.
If employees enter permit spaces, employer shall develop and implement a written permit space program.
**Written Permit Space Program**  1910.146(d)

- Provide measures and procedures:
  - Prevent unauthorized entry
  - Identify permit space hazards
  - Ensure implementation of safe entry
  - Maintain and ensure proper use of equipment
  - Evaluate permit space conditions
  - Provide for at least one attendant
  - Monitoring multiple spaces
Written Permit Space Program 1910.146(d)

- Method of designating the role(s) of each active person (attendants, entry supervisors, entrants)
- For summoning rescue and other emergency operations
- System for preparation, issuance, use, and cancellation entry permit
- System for concluding entry after entry completion
- Coordination with multiple employers
- System to review entry operations and permit space program
Confined Space Entry Hierarchy

- **No “permit” space**
  - Entry permitted only if *all* hazards are eliminated

- **Alternate entry procedures**
  - Only in controlled atmospheric hazardous spaces

- **Written permit system**
  - Required for *any* high hazard space
Alternative Entry Requirements

- Employees must be trained
- Atmosphere tested before and during entry
- Continuous ventilation
- If a hazardous atmosphere is detected, or ventilation stops, the space must be promptly exited

1910.146 (c)(5)
Permit System

- Written procedure for preparing and issuing permits for entry and returning permit space to service.

- Requirements:
  - Document completion of required measures
  - Permit availability
  - Supervisor signature
  - Activity (job) duration
  - Permit termination/cancellation (1 year)
Entry Permit

- Entry permit shall identify:
  - Space to be entered
  - Purpose of entry
  - Date and duration
  - Authorized entrants
  - Personnel (attendant and supervisor)
  - Hazards within the space
  - Isolation of space
  - Acceptable entry conditions

1910.146(f)
Entry Permit

- Additional requirements
  - Air monitoring testing results
  - Specifies safety equipment/PPE
  - Methods used to control the hazards
  - Communication procedures
  - Name and telephone of the rescue service
  - Rescue and emergency services
Air Monitoring and Ventilation

- Before and during entry

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<th>Value</th>
<th>Lighter/heavier than air gases</th>
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<td>Lighter than air gases</td>
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<td>Jet Fuel</td>
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Air Monitoring and Ventilation
Duties Assigned

- **Authorized entrant**: Employee(s) who enter into the permit space.

- **Attendant**: Individual stationed outside space who monitors entrant(s).

- **Entry supervisor**: Person responsible for planning, authorizing, and terminating entry.
Authorized Entrant

- Knowledge of hazards in permit space
- Proper use of equipment
- Communication methods
- When to alert attendant
- When to exit
Attendants

1910.146(i)

- Knowledge of hazards in permit space
- Aware of behavioral effects of exposure
- Maintains an accurate count of entrants
- Remains outside permit space during operations
- Communicates with entrants
- Monitors activities inside and outside space
- Summons rescue and emergency services
Attendants

- Takes action when unauthorized persons approach permit space
- Performs non-entry rescues
- Performs no other duties that might interfere with primary duty – to monitor and protect entrants
Entry Supervisors

- Knowledge of hazards in permit space
- Verifies completion of all tests, procedures and equipment in place as specified by permit
- Terminates and cancels permit as required
- Verifies rescue services and operable summons capability
- Removes unauthorized individuals
- Ensures entry operations remain intact
Training

Training provided so all employees acquire the understanding, knowledge, and skills necessary for the safe performance of duties assigned.

- Before first assigned to duties
- Before change in assigned duties
- When change in operations
- Employee proficiency
- Certificate of training

Certificate of Training
Confined Space Training
Rescue and Emergency Services 1910.146(k)

- **Entry rescue**
  - Use rescue and emergency services
  - Use own employees

- **Non-entry rescue**
  - Entrants use retrieval systems or methods
Rescue and Emergency Services 1910.146(k)(1)

- Using rescue and emergency services
  - Evaluate prospective services ability to perform the summons in a timely and proficient manner
  - Identify the hazards in the space
  - Practice mock rescues
Rescue and Emergency Services 1910.146(k)(2)

- Rescue using in-house employees
  - Trained to perform assigned rescue duties
  - Trained in basic first aid and CPR
  - Practice rescue at least annually

- **Note:** If using air-supplying respirators, additional training is required per 1910.134
Non-entry rescue

- Retrieving an entrant from a confined space without going into the space.
- Entrants must wear a chest or full body harness with retrieval line attached.
**Additional Information**

- **A:** Permit-required Confined Space Decision Flow Chart
- **B:** Procedures for Atmospheric Testing
- **C:** Examples of Permit-required Confined Space Programs
- **D:** Sample Permits
- **E:** Sewer System Entry
- **F:** Non-Mandatory — Rescue Team or Rescue Service Evaluation Criteria
Permit Required Confined Space Decision Flow Chart

1. Does the workplace contain PERCS as defined by 1910.146(i)?
   - Yes: Consult other applicable OSHA standards.
   - No: Do task from outside of space.

2. Will permit space be entered?
   - Yes: Task will be done by contractor's employees. Inform contractor as required by 1910.146(a)(3).
   - No: Both contractors and host employees will enter the space.

3. Will contractors reassume?
   - Yes: Contractor obtains information required by 1910.146(a)(10) from host.
   - No: Both contractors and host employees will enter the space.

4. Will host employees enter to perform entry tasks?
   - Yes: Both contractors and host employees will enter the space.
   - No: Prevent unauthorized entry.

5. Does space have known or potential hazards?
   - Yes: Permit not required.
   - No: Consult other OSHA standards.

6. Can the hazards be eliminated?
   - Yes: Employees may choose to conduct permit space to non-permit required confined space using 1910.146(c)(7).
   - No: Permit not required.

7. Can the space be maintained in a condition safe to enter by continuous forced air ventilation only?
   - Yes: Permit not required.
   - No: Permit not required.

8. Prepare for entry via permit procedures.
   - Yes: Permit not required.
   - No: Permit not required.

9. Verify acceptable entry conditions.
   - Yes: Permit not required.
   - No: Permit not required.

10. Permit issued by authorizing signature.
    - Yes: Continue with any other conditions.
    - No: Continue with any other conditions.

11. Entry task completed. Permit terminated and canceled.
    - Yes: Continue with any other conditions.
    - No: Continue with any other conditions.

12. Permit-Related Confined Space Decision Flow Chart
    - Yes: Continue with any other conditions.
    - No: Continue with any other conditions.

Source: 29 CFR 1910.146 Appendix A.
Confined Spaces

- Storage tanks
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1910.146 and 1926.21(b)(6)
Definition of Confined Space  1926.21(b)(6)

- **Construction Industry**
  - Having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere.
Confined Spaces in Construction

- Employees required to enter confined or enclosed spaces shall be instructed on hazards, precautions to be taken, and use of protective and emergency equipment.

- Employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.
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Summary

This presentation covered:

- Identification of a confined space
- How to recognize the difference between a confined space and permit-required confined space
- Methods used to determine if/when hazards exists within the confined space
- Responsibilities for entrant, attendant and entry supervisor
- Rescue options
Thank You For Attending!

Final Questions?