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### Confined Spaces In Construction

- In effect 8/3/15
- Previous standard was inadequate, only major requirement was training
- New standard is similar to 29 CFR 1910.146 (General Industry) with a few more requirements



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### Old Construction Standard 1926.21(b)(6)(i)

- 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.



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### Overview of Differences GI vs Construction

- GI Standard, Plus:
- A competent person must conduct worksite evaluation
- Employers using "alternate procedures" for permit space entry must prevent physical hazard exposures through elimination or isolation through methods such as LOTO



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**Overview of Differences, *cont'd***

- Continuous monitoring of atmospheric and engulfment hazards
- Employers relying on local emergency services for rescue must arrange for responders to notify in advance if responders will be unavailable



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**Overview of Differences, *cont'd***

- Specific information exchange requirements for multi-employer work sites
  - Host employer
  - Controlling Contractor
  - Entry Employer



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**General Industry vs. Construction**

- What if an employer does construction AND maintenance work in the same space at the same time?
  - Employers with workers engaged in both types of work will be in compliance with both standards if they follow 1926 Subpart AA.



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### A Confined Space is...

- Large enough for an employee to enter
- Limited or restricted means for entry/exit
- Not designed for continuous worker occupancy
  - No ventilation
  - No lighting
  - Normally holds materials, water, grain, etc



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### What is a Permit-Required Confined Space?

- A Confined Space WITH:
  - Hazardous or potentially hazardous atmosphere;
  - Engulfment hazard;
  - Physical Hazard;
  - Other serious safety or health hazard



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### Examples of Confined Spaces

- Crawl Spaces
- Pits
- Vaults
- Manholes
- Storage bins
- Sewers
- Tanks
- Silos
- Attics
- Shafts
- Pipelines



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Accident Report Detail

Accident: 202004891 - Employee Dies From Asphyxiation Due To Nitrogen

Accident: 202004891 -- Report ID: 0317000 -- Event Date: 01/19/2007

Inspection	Open Date	SIC	Establishment Name
110714557	01/22/2007	8221	Swarthmore College

Between 9:30 a.m. and 1:00 p.m. on January 19, 2007, Employee #1 inserted his upper torso into a cardboard box. He was probably adjusting the placement of plastic tubing of which one end was attached to a wall mounted needle valve that was dispensing nitrogen. The other end was inserted into the box through a cut out opening. He was alone in a room with a self locking door. At approximately 8:30 p.m. a security officer found him in a non-responsive condition. Employee #1 died of asphyxiation due to the displacement of oxygen by nitrogen.




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### Site Evaluation

- Any employer whose employee may enter a confined space must conduct evaluation
- The evaluation and posting may be coordinated through a single employer
- Site evaluation involves:
  - hazards already in the space
  - hazards created as a result of the work being done




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### Will there be entry?

- **No:** Employer must take effective action to prevent employees from entering the permit space.
- **Yes:** Employer must implement a permit program or use “alternative procedures”.



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### Posting

- If spaces exist, inform workers the existence, location, and danger of each permit space.
  - A sign reading “DANGER – PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” would satisfy the requirement for posting.



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### Program vs Permits

- A written program outlines what the employer will do to protect its workers from permit space hazards
- In contrast, permits contain specific information about the particular space entered under that permit
  - Permits created by the employer, not government entity



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**Permit Space Program Includes:**

- Identification/evaluation of hazards
- Prevent unauthorized entry
- Means/procedures for safe entry
- Required Equipment
- Permits
- Rescue
- Training
- Review and Revise




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**What needs to be on the permit?**

- The space to which the permit applies.
- The purpose of the entry.
- The date and duration of the permit.
- The names or other designation of the authorized entrants (can refer to a roster or tracking system).
- Methods used to detect increases in hazardous atmospheric conditions.




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**What needs to be on the permit?  
(cont'd)**

- Name of attendant(s).
- Name of entry supervisor(s), and signature or initials of each supervisor who authorizes entry.
- Hazards in the space and measures used to eliminate or control permit space hazards.
- Acceptable entry conditions.
- Results of atmospheric tests and monitoring and names/initials of testers, and dates of tests.




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**What needs to be on the permit?  
(cont'd)**

- Rescue and emergency services that can be summoned and the means (such as equipment to use and numbers to call) for summoning those services.
- Communication procedures used by entrants and attendants during entry.
- Equipment necessary for entry.
- Any additional permits (such as hot work) issued to authorize work being performed in the space.




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**Alternate Procedures**

- To use “alternate procedures”, the permit space must:
  - Have only atmospheric hazards (or potential hazards)
    - If physical hazards must be eliminated or isolated, this has to happen without entering the space OR by entering under full permit conditions until the physical hazards are eliminated.




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**Alternate Procedures (cont'd)**

- Must show that continuous forced air ventilation is sufficient to control atmospheric hazards and that workers can exit the space safely in the event of an emergency.
- Must use continuous or periodic monitoring to ensure the forced air is effective.
- Must document that the space is safe and that pre-entry measures have been taken.




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### From the Executive Summary...

- Although the final rule does not prohibit the use of suction, suction is not an adequate means of providing the general ventilation required by this final rule. The general industry standard does not include a definition of “ventilation,” but OSHA interpreted that standard as precluding the use of “negative” suction ventilation to meet the requirements of the standard.




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### Worker Training

- Training must cover:
  - Hazards in permit spaces and methods used to protect workers from those hazards.
  - The dangers of unauthorized rescues.
  - Must result in proficiency in the duties assigned under this standard and new or revised procedures, as necessary.




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### When should workers be trained?

- Before the worker is assigned duties.
- Before there is a change in assigned duties.
- Whenever there is a change in permit space entry operations.
- Whenever there is a deviation from procedures or deficiencies in the worker’s knowledge or use of those procedures.




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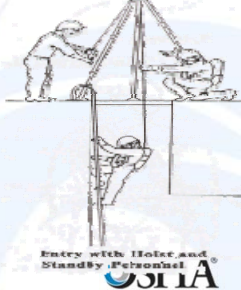
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### Participants

- Entrant
- Attendant
- Supervisor
- Rescue



Entry with Hoist and Standby Personnel  
OSHA

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### Entrant Duties

- Know the hazards
- Properly use equipment
- Communicate with attendant / alert attendant
- Evacuate space quickly



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### Attendant Duties

- Know hazards
- Remain immediately outside the permit space
- Communicate with entrants
- Monitor activities inside and outside the space
- Summon rescue services
- Keep unauthorized people away
- Assist with non-entry rescue



OSHA

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### Entry Supervisor Duties

- Know the hazards
- Verify all procedures and equipment in place
- Ensure entry conditions are maintained
- Verify rescue services are available
- Remove unauthorized people
- Terminate entry/cancel permit




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### Rescue

- Non-entry rescue must be provided unless it increases risk or would not contribute to a successful rescue



#### Full-body harness with retrieval line

- Dorsal attachment point, above the entrant's head, or at point which allows the entrant to be pulled out safely.
- Must be attached to a mechanical device or fixed point outside the space. A mechanical device (such as a winch) must be available if the space is more than 5 feet deep.




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### Rescue

- If entry rescue is required, the employer must ensure the rescue service:
  - Can respond in a timely manner
  - Can perform rescue in the specific space(s)
  - Can reach victims in a time frame appropriate for the hazards identified
  - Is equipped for and proficient in the necessary services
  - Agrees to notify the employer in the event the service becomes unavailable




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**Rescue**

- Entry rescue (cont'd)
  - Employers must inform the rescue service of the hazards it may confront
  - Employers must provide the rescue service with access to all permit spaces from which rescue may be necessary



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**What about the rescuers?**

- If an employer's workers will perform rescue, the employer must, at no cost to the workers:
  - Provide the necessary PPE and training
  - Train each worker how to perform assigned rescue duties
  - Train each worker in basic first aid and CPR, and ensure one member of the team has a current certification in both
  - Ensure each worker practices rescue before attempting an actual rescue, and at least every 12 months.



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**Can you use Non-Entry rescue in a crawl space or attic?**

- How would you rescue someone?
- Challenges with configuration
- May require entry rescue



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### Who will rescue me?



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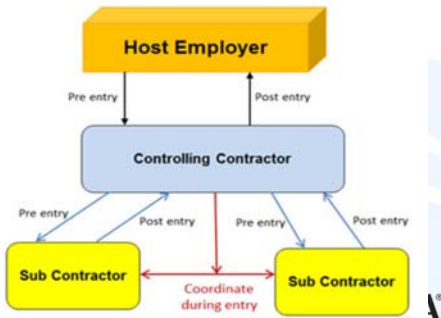
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### Information Exchange



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### Resources



- <http://www.osha.gov/confinedspaces/index.html>



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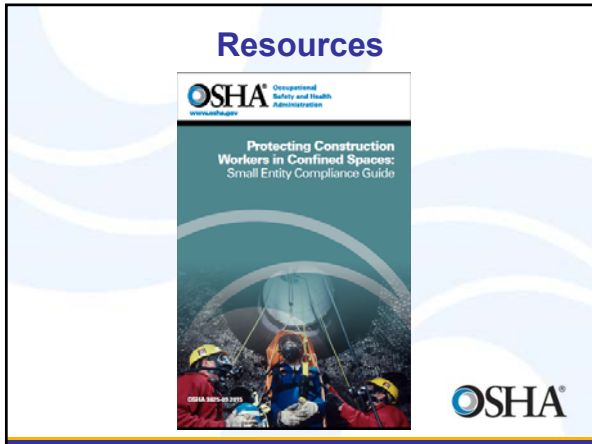
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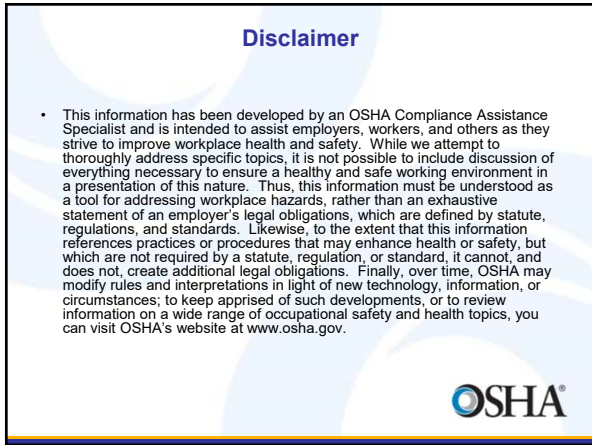
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