

CONFINED SPACE COMPLIANCE: WHAT YOU NEED TO KNOW

LEVERAGING YOUR EHS RESOURCES TO MAXIMIZE VALUE



OUR TEAM FOR TODAY'S PRESENTATION



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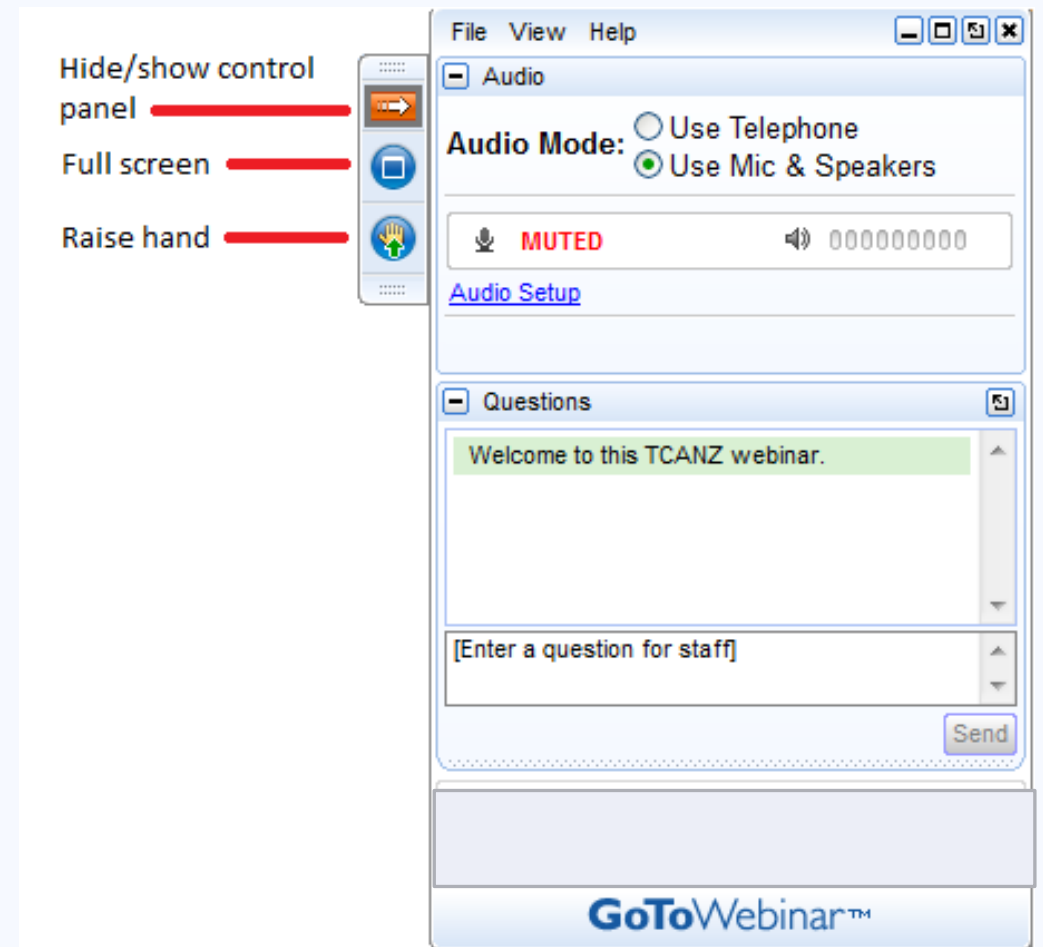


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HOUSEKEEPING

- This presentation is being recorded and will be shared.
- Everyone will be muted to prevent background noise.
- Use the question button to log your question.



TODAY'S TOPICS

- Background on Confined Spaces
- OSHA statistics
- Pitfalls of confined space entry programs and procedures
- Confined Space Determinations
- Confined Space Element



BACKGROUND ON CONFINED SPACES

OSHA Regulations:

- 29 CFR 1910.146 (General Industry)
- 29 CFR 1926.1203 (Construction Industry)

2.1 million entrants annually

60% of deaths according to NIOSH are would-be rescuers

Cal/OSHA Cites Equipment Company, Refers Construction Company for Criminal Prosecution Following Confined Space Deaths

OSHA Proposes Penalties of \$287K Following Death of Two Workers from Not Enough Oxygen

The employer did not test the oxygen levels in the sewer manhole, OSHA said.

Company Faces \$531K OSHA Fine After Worker Died in Corn Silo

NIOSH CONFINED SPACE STUDY

- 85% of the time a SUPERVISOR was present.
- 29% of the dead were SUPERVISORS.
- 31% had WRITTEN Confined Space Entry PROCEDURES.
- 0% used the WRITTEN PROCEDURES.
- 15% had Confined Space TRAINING.
- 0% had a RESCUE PLAN.
- 60% of deaths are "WOULD-BE" RESCUERS
- 95% were AUTHORIZED by supervision.
- 0% of the spaces were TESTED prior to entry.
- 0% were VENTILATED.



OSHA CONFINED SPACE STATISTICS

From 2011 to 2018, 1,030 workers died from occupational injuries involving a confined space. The annual figures range from a low of 88 in 2012 to a high of 166 in 2017. These data are from the Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI).

Table 1. Fatal occupational injuries involving confined spaces, 2011-2018

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------|------|------|------|------|------|------|------|------|
| Fatal work injuries | 120 | 88 | 112 | 116 | 136 | 144 | 166 | 148 |

Table 3. Occupations with the most fatal workplace injuries involving confined spaces, 2011-2018

| Occupation ^[1] | Fatalities |
|--|------------|
| Construction laborers | 173 |
| Farmers, ranchers, and other agricultural managers | 79 |
| First-line supervisors of construction trades and extraction workers | 63 |
| Plumbers, pipefitters, and steamfitters | 46 |
| Farmworkers and laborers, crop, nursery, and greenhouse | 40 |
| Laborers and freight, stock, and material movers, hand | 32 |
| Cleaners of vehicle and equipment | 28 |
| Heavy and tractor-trailer truck drivers | 27 |
| Maintenance and repair workers, general | 26 |
| Pipelayers | 26 |

Table 2. Types of confined spaces for fatal occupational injuries, 2011-2018

| Type of confined space | Fatalities | Most frequent event ^[1] |
|--|------------|---|
| Tank, bin, vat interiors | 205 | Engulfment in other collapsing material (86) |
| Silo, grain bin interiors | 107 | Engulfment in other collapsing material (72) |
| Septic tank or water tank interiors | 19 | Falls to lower level (7) |
| Hopper interiors | 10 | Engulfment in other collapsing material (7) |
| Oil storage tank interiors | 7 | Inhalation of a harmful substance (4) |
| Grain elevator interiors | 6 | Engulfment in other collapsing material (3) |
| Trash bin or dumpster interiors | 3 | No publishable data |
| Ditches, channels, trenches, excavations | 203 | Trench collapse (166) |
| Underground mines, caves, tunnels | 129 | Inhalation of a harmful substance (29) |
| Sewers, manholes, storm drains | 61 | Inhalation of a harmful substance (27) |
| Underground mines, mine tunnels | 58 | Struck by falling object or equipment (21) |
| Confined spaces on vehicles | 45 | Inhalation of a harmful substance (20) |
| Tanker truck interiors | 20 | Inhalation of a harmful substance (16) |
| Manure pits | 18 | Inhalation of a harmful substance (7) |
| Crawl spaces | 13 | Direct exposure to electricity, 220 volts or less (5), Exposure to environmental heat (5) |
| Wells, cisterns | 10 | Falls to lower level (6) |

PITFALLS OF CONFINED SPACE PROGRAMS

POLICY / PROCEDURES

- Lack of established policy and procedures for entering a confined space
- Clear steps to eliminate or mitigate hazards
- Not enforcing company confined space requirements

TRAINING

- Ineffective training for entrants, attendants, supervisors, and rescue personnel
- Training that doesn't include hands-on



PITFALLS CONTINUED

- Maintenance of confined space equipment
 - Confined space meters
 - Non-entry retrieval systems
 - Ventilation systems
- Management of contractor entry into confined spaces
- Oversight of confined space entry



CONFINED SPACE ASSESSMENT

Is the space...

1. Large enough to enter?
2. Limited or restricted entry or exit?
3. 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
Confined
Space

CONFINED SPACE DETERMINATION SHEETS

- Determine if confined spaces exist at your facility
- Determine the hazards that could potentially exist in the space
- Implement effective controls to eliminate or mitigate the identified hazards of the space
- Determine the space classification



Space Being Evaluated: Oxidizer Unit

Work To Be Performed: Cleanouts / Inspection

Authorized Entrants: Maintenance Employees / Contractor

Step I. Is the space?

| Confined Space | Yes | No |
|---|-----|----|
| 1) Large enough for a body to enter AND | X | |
| 2) Limited or restricted means for entry or exit AND | X | |
| 3) NOT designed for continuous occupancy | X | |

If the answer to any of the questions is "NO," it is "Not A Confined Space," proceed to Step IV, sign, date, and keep worksheet on file.

If the answer to **ALL** three questions above is "YES," it is a "Confined Space," go to Step II.

Step II. Does the confined space have the potential to contain one or more of the following hazards?

| Hazard(s) Identification | Yes | No |
|---|-----|------------------|
| 1) Contains, or has the potential to contain, a hazardous atmosphere a. 10% LEL (Lower Explosive Limit) – Flammable/combustible gases b. Dust Concentration > LEL Dust c. Oxygen (O ₂) level is less than 19.5% or greater than 23.5% d. PEL (Permissible Exposure Limit) Exceeded e. IDLH (Immediately-Dangerous-to-Life-or-Health) Atmosphere OR | X | X X X X |
| 2) Potential to be engulfed (completely surrounded by material, i.e. cave-ins, drowning, buried) OR | | X |
| 3) Potential to be trapped or asphyxiated by inwardly converging walls OR | | X |
| 4) Other serious safety or health hazard: Temperature / Difficult to maneuver in/out, electrical | X | |

If the answer to **ALL** the questions is "NO" it is considered a "Non-Permit Confined Space," proceed to Step IV, sign, and date and keep worksheet on file.

If the answer to **ANY** of the above questions in Step II is "YES," the space is considered a potential permit-required confined space. Proceed to Step III.

Step III. Can the hazards be controlled without entering the space (list out each hazard)?

NOTE: Describe the procedure(s) used to eliminate or control all the hazards identified in Step II. The hazards must be controlled without entering the permit-required confined space.

| Hazard(s) Identified in Step II | Controlled? | |
|--|-------------|----|
| | Yes | No |
| Internal Temperature - Cool Down Unit for 24 hours prior to entry. | X | |
| Air Hazards – Open the adjacent manhole to the one being entered. Use a ventilator for 3-4 hours prior to entry and for duration of the entry. Test the air from outside the space prior to entry. When safe conditions are verified, the attendant will continuously monitor to track atmosphere. | X | |
| Slip, trip, fall hazards – Employees will work in pairs to assist in maneuver through equipment. | X | |
| Electrical – The unit will be locked and tagged to prevent accidental start up. | X | |
| | | |
| | | |
| | | |

If the answer to **ANY** of the above questions is "NO," or if the space contains both potential atmospheric hazards and other hazards, then the space is considered a "Permit-Required Confined Space." Proceed to Step IV, sign, date and keep worksheet on file.

If the space poses no actual or potential atmospheric hazards, and the other hazards are answered as "YES" the hazards are controlled, it is considered a "Reclassified Confined Space," proceed to Step IV, sign, date and keep worksheet on file.

If the space only has actual or potential atmospheric hazards, and those hazards are answered as "YES" the hazards are controlled, it is considered "Alternate Entry Confined Space," proceed to Step IV, sign, date and keep worksheet on file.

WHAT IS A CONFINED SPACE?



1. Worker can enter and perform work
2. Limited means of entry or exit
3. Not designed for continuous occupancy

WHAT IS A PERMIT-REQUIRED CONFINED SPACE?

- Contains a hazardous atmosphere
- Contains the potential for engulfment
- Internal configuration that can trap or asphyxiate
- Any other serious safety or health hazards

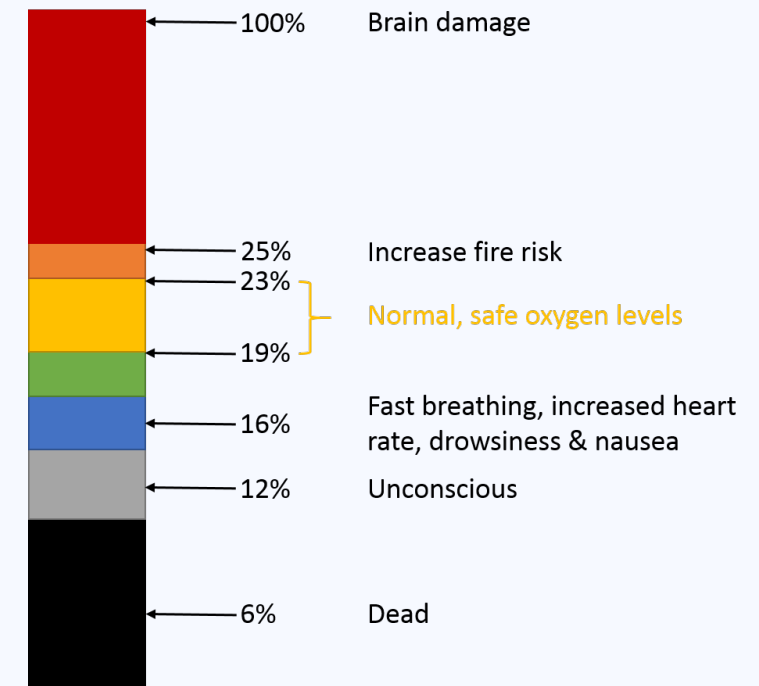


POTENTIAL AIR HAZARDS

- Oxygen Deficiency
- Oxygen Enrichment
- Flammability
- Toxic Chemicals
- Asphyxiation

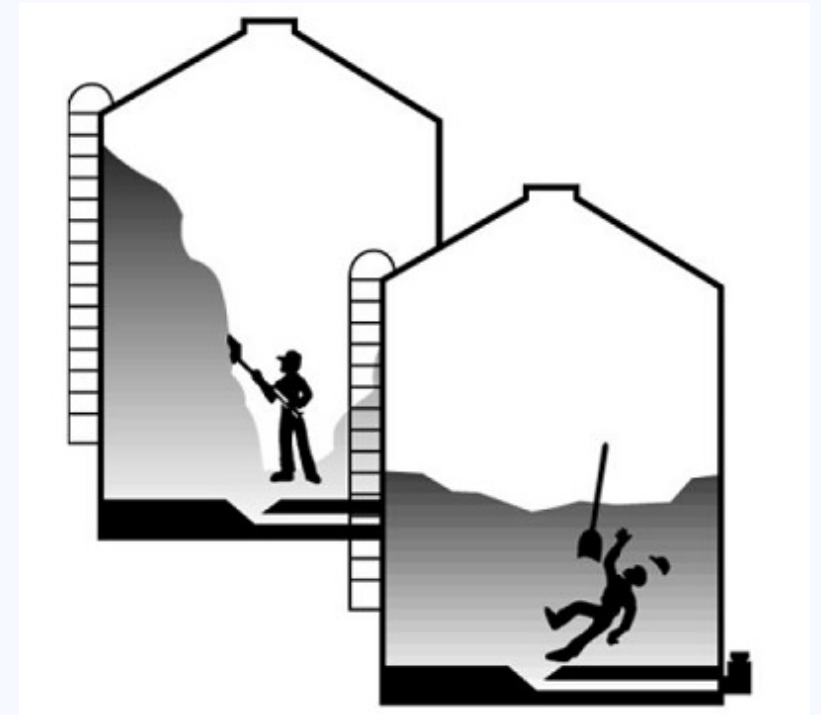


The Results of Oxygen Levels



ENGULFMENT HAZARDS

- Presence of grain, sand, water, or other potential engulfment material
- Mode of suffocation
 - Entrant covered or partly covered by material
- Behavioral effects
 - No response to calls
 - Stops breathing



SPACE WITH INWARDLY SLOPING WALLS

Configuration hazard that could trap or asphyxiate

Floor that slopes downward and tapers to a smaller cross section



PHYSICAL HAZARDS

- Moving machine parts
- Surface residue
- Structural
- Electrical
- Noise
- Vibration
- Biological and heat



CSE PERMIT

Includes:

- Identification of space
- Description of the work to be conducted
- Authorized duration of the permit
- The hazards of the space
- The controls for those hazards (equip and PPE)
- Atmospheric monitoring data
- Rescue Method
- Log of Entrants, name of Attendants, name of Supervisor
- Approvals to proceed
- Method to cancel/close the permit



Attachment [number]

[Company name]

Certification for Confined Space Entry

Confined space identification/type: _____

Classification: Permit Required Non-Permit Required

Site location: _____

Purpose of entry: _____

Communication procedure(s): _____

Rescue procedure(s): _____

| Requirements completed: | Date | Time |
|--|-------|-------|
| Secure area (barriers around entrance if needed) | _____ | _____ |
| Physical hazards eliminated | _____ | _____ |
| Biological hazards eliminated | _____ | _____ |
| Full-body harness w/"D" ring | _____ | _____ |
| Lighting (as needed) | _____ | _____ |
| Protective clothing (hard hats and gloves) | _____ | _____ |
| Respirator(s) _N/A (Type: _____) | _____ | _____ |
| Forced ventilation | _____ | _____ |
| Lockout types of energy sources (_____) | _____ | _____ |

Note: Items that do not apply, enter N/A in the blank.

Atmospheric checks: Location of testing (top, mid, bottom)

| Hazard | Top | Middle | Bottom |
|------------------------|----------------|----------------|----------------|
| Oxygen (19.5 to 23.5%) | [reading/time] | [reading/time] | [reading/time] |
| [name] | | | |
| | | | |
| | | | |

Tester's Signature: _____

Tester's comments: _____

Entrant name(s): _____

Certifying entry supervisor: _____

Printed entry supervisor name: _____

Date: _____

Remarks: _____



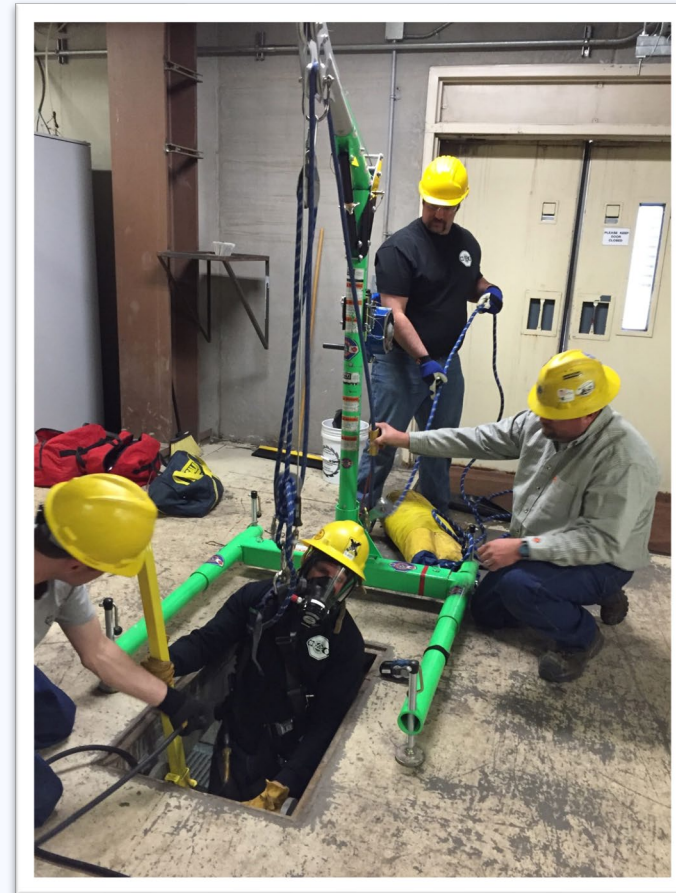
CONFINED SPACE EMPLOYEE RESPONSIBILITIES

- Authorized Entrant
- Entry Supervisor
- Attendant
- Rescuer



NON-ENTRY RESCUE

- Full-body harness and lifeline
- Visual or verbal confirmation of safety
- Attempt to untangle lines
- Mechanical device or fixed point



ENTRY RESCUE

- Trained rescue squad
- First aid and CPR trained
- Rescue practiced annually
- Provided with PPE
- Notified by Attendant
- Outside rescue services



RECLASSIFYING AND USING ALTERNATE PROCEDURES

ENTRY USING ALTERNATE PROCEDURES

- Must develop monitoring and inspection data to prove hazards
- Monitoring to prove atmospheric conditions must be done from outside the space
- Monitoring data must be documented
- Entry must be terminated if conditions change



RECLASSIFICATION OF A SPACE

If there are no actual or potential atmospheric hazards

and

all hazards can be eliminated from outside of the space,

the space may be reclassified as...

**Non Permit Required
Confined Space**

KEY POINTS TO REMEMBER

- Classify Confined Spaces Properly
- Provide effective training
- Follow proper protocols for hazard mitigation
- Work as a team with roles and responsibilities
- Reclassify or use alternate entry to a space only if it can be done correctly
- Communicate throughout the entry
- Audit yourselves

Connect with us for a 15 minute
consultation.

GET IN TOUCH:

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Questions?

Thank you for joining us.