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DAMAGE PREVENTION TRAINING CONFERENCE

2023 • FRENCH LICK, IN



Confined Space Entry Training

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Course Goal

- ✪ Prevent personal injuries/fatalities relating to a confined space entry





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Terms & Definitions



1. CONFINED SPACE:

- ✱ Is large enough to enter into and work
- ✱ Has a limited means of entry/exit
- ✱ Is NOT designed for continuous periods of occupancy



CLASSES OF CONFINED SPACE

- ★ **Class A** – IDLH atmosphere. May contain oxygen deficiency, explosive or flammable atmospheres, and /or concentrations of toxic substances.



CLASSES OF CONFINED SPACE cont'd

- ☀ **Class B** – space has potential for causing injury if proper safety steps are not followed



CLASSES OF CONFINED SPACE cont'd

- ★ **Class C** – space has potential hazards, but would not require any special modification of the work procedures.



TYPES OF CONFINED SPACE...

- ✱ **Not-Permitted**

... Does **NOT** contain physical, chemical or atmospheric hazards capable of causing death or serious physical harm

- ✱ **Permitted**

... **DOES** contain physical, chemical or atmospheric hazards capable of causing death or serious physical harm



Note:

- ✱ The classification of ANY confined space SHALL be determined ONLY BY Trained AND Authorized persons





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Examples



EXAMPLES OF CONFINED SPACES:

- ★ Tanks, vessels, silos, storage bins, hoppers, vaults, pump stations, scale pits, crawl spaces, tunnels...





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Terms & Definitions, *cont'd*



2. ENGULFMENT

- ★ A liquid or a “flowable” solid like sand or grain that can surround and bury, smother, strangle, or crush a person.



ENGULFMENT *cont'd*

- ✿ Trenches deeper than 4ft
 - Engulfment hazard: cave-in
 - Preventive measure: shoring & evacuation route



3. IDLH

- ✱ Immediately **D**angerous to **L**ife and **H**ealth
 - Poses an immediate or delayed threat to life, **OR...**
 - Causes irreversible adverse health effects, **OR...**
 - Interferes with ability to escape unaided from a permit space



3. IDLH, *cont'd*

- ✱ May be used to determine need for PPE
 - MSDS's
 - List of IDLH values
- ✱ If conditions meet or exceed **IDLH** values, implement PPE



4. QUALIFIED PERSON

- ★ Designated by the employer in writing, as CAPABLE (by education, training, or both) of:

Anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space; AND of

Specifying necessary control and/or protective action to ensure employee safety



5. ATTENDANT

- ★ An observant, competent/experienced person stationed outside of a confined space to assist the entrant



6. AUTHORIZED ENTRANT

- ✱ A worker authorized to enter a confined space



7. ENTRY SUPERVISOR

- ★ The employee responsible for overseeing the confined space entry operations; permit signing; and safety compliance





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1. CONFINED SPACE ASSESSMENT



ASSESSMENT MUST INCLUDE:

1. Pre-entry testing and monitoring
of/for:

- ✿ Atmospheric conditions
- ✿ Potential hazard in and around the
area



POTENTIAL HAZARDS

- ✱ Deficient or enriched oxygen
 - Safe level: 19.5% - 23.5%
- ✱ Combustible, flammable, and explosive atmospheres
- ✱ Toxic gases and vapors
- ✱ Corrosive chemicals or biological agents



POTENTIAL HAZARDS

cont'd

- ★ Physical hazards—
 - Falling, tripping, moving parts, engulfment, heat extremes, etc...
- ★ Electrical hazards—
 - Shock hazard, static electricity, sparks, etc...
- ★ Rodents, snakes, and insects



ASSESSMENT MUST ALSO INCLUDE:

2. Written procedures to remove or control hazards including ventilation, LOTO, PPE and communication
3. Written emergency response





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2. POST SIGNAGE AND BARRICADE



POSTED SIGNAGE

- ✱ MUST be in the immediate area
- ✱ MUST identify the Confined Space
- ✱ Restricts **unauthorized** personnel
 - E.G.: “DANGER—PERMIT REQUIRED
CONFINED SPACE, DO NOT ENTER”



BARRICADES

- ✱ MUST prevent unwanted access to the work area
- ✱ MUST ensure clear workspace for attendant and emergency rescue (if needed)





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3. WRITE THE PERMIT



PERMITS

- ★ Are written authorization and approval specifying the location and type of work
- ★ Certify that all existing hazards have been assessed
- ★ Ensure the safety of each worker
- ★ Specify the date & length of time it applies





Note:

**PERMITS ARE ALWAYS
POSTED IN THE WORKPLACE
DURING ENTRY**





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4. PERFORM PRE-ENTRY TESTS



TESTING STANDARDS

- ★ Duration—Recommend continuous
- ★ Sample priority—Oxygen; Flammable/combustible chemicals; Toxic chemicals



TESTING METHODS

- Sample in layers
 - Every four feet in direction of travel
 - Different chemicals stratify
 - Do not get equipment wet!!





Note:

**REMEMBER TO DOCUMENT
ALL ATMOSPHERIC TESTING
RESULTS**





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5. TAKE OTHER SAFETY PRECAUTIONS



OTHER SAFETY PRECAUTIONS

- ✱ PPE
- ✱ Lockout/Tag out
- ✱ Verify emergency response
- ✱ Remove sources of hazardous materials outside of confined space
- ✱ Ventilation



VENTILATION

- ✱ Exhaust
 - Negative pressure
 - Local - for specific sources
 - General - for non-specific sources
- ✱ Purging
 - Positive pressure
 - Using inert gases in flammable/combustible environment
 - Causes need for additional PPE





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6. PRE-ENTRY BRIEFING



PRE-ENTRY BRIEFING

- ✱ Conduct meeting
- ✱ Include all affected persons
- ✱ Document topics discussed at the briefing





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7. PERFORM ENTRY AND WORK



ENTRY DOCUMENTATION

- Entrant should sign an entry log
 - Posted in immediate area





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8. PERFORM CONTINUOUS MONITORING



CONTINUOUS MONITORING

- ★ **REMEMBER** the mentioned sampling methods





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9.EXIT THE CONFINED SPACE



EXITING THE CONFINED SPACE

- ✱ When work is complete, when replacement arrives, or if an alarm sounds
- ✱ In the event of an emergency, utilize emergency rescue
- ✱ Remember to update the entry log!!



ON-SITE RESCUE

- ✿ Employer determined if on/off-site rescue will be used
- ✿ On-site, usually comprised of in-house personnel—
 - Motivated team
 - Extensive training
 - Practical exercises (min. once/12 months)
 - Regular reinforcement of training



OFF-SITE RESCUE

- ★ Assessment necessary
 - Determine the practicality of off-site rescue
- ★ If used:
 - Close proximity
 - Extensive pre-coordination
 - Must understand the hazards to be faced
 - Must have access to all spaces for pre-planning





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10. CONDUCT DEBRIEFING



DEBRIEFING

- ✱ Discuss the success of the work
- ✱ Identify concerns that occurred
- ✱ Verify completion of all documentation
- ✱ Document meeting, if possible





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11.VERIFY COMPLETION



VERIFY COMPLETION

- ★ The entry supervisor should remain for at least 30 minutes after the entry to ensure the security of the site and that no hazards remain (ex. Fires)





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ELEMENTS OF A WRITTEN PROGRAM



PROGRAM ELEMENTS

- Identification and location of ALL recognized confined spaces
- Hazard evaluation procedures
- Warning procedures
 - Ex: Signs at entrance



MORE ELEMENTS...

- ✱ Written procedures for pre-entry and entry
- ✱ Written procedures for permitting



MORE ELEMENTS...

- ✿ Assignment of responsibilities
 - Entrant
 - Attendant
 - Entry supervisor





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EMERGENCY RESPONSE



EMERGENCY RESPONSE

- ★ Attendant alerts the rescue services
- ★ Close off the area
- ★ Get authorized entrants out of the space
- ★ Perform first aid if needed.
- ★ Chest or body harnesses are worn by authorized entrant to allow for safe rescue.





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CONFINED SPACE TRAINING



TRAINING REQUIREMENTS

- New employees
 - At time of employment, if affected...or...
 - When delegated affected responsibility
- Existing employees
 - Refresher training
 - Rescue drills at least annually



TRAINING CONTENT

- All aspects of the written program
- Emergency procedures
- Document all training activities



RECORD KEEPING REQUIREMENTS

- ✱ Written program
- ✱ Training records
- ✱ Atmospheric testing records
- ✱ Permitted and non-permitted entries into confined spaces



Let's review...

- ✿ What is the safe oxygen level?
- ✿ What are the 2 options for emergency response?
- ✿ Where should the permit be maintained during entry?
- ✿ When should an entrant exit the confined space?



FOR ADDITIONAL ASSISTANCE...

Call your SAFETY Representative



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