

# **7 - Hazards Of Confined Space: Safety Training**

EH&S – MGA

**Goals: This safety session should teach you to:**

- A. Know the characteristics and hazards of confined spaces.
- B. Understand how to follow confined space rules and regulations to protect yourself.

**OSHA Regulations: 29 CFR 1910.146**

**1. OSHA Defines Confined Spaces As Work Areas With Certain Features**

- A. Large enough to enter and work in
- B. Limited entry and exit areas
- C. Not designed to be occupied for extended periods
- D. Examples include: tanks, silos, storage bins, hoppers, vaults, pits, furnaces, tunnels, sewers, pipelines, crawl spaces, process vessels, or underground areas
- E. Confined space tasks include: cleaning, painting, welding, scraping, performing repairs, or maintenance.
- F. It becomes a permit-required confined space if, in addition, it presents or has the potential for any recognized serious hazard.

**2. Employers Must Test Confined Spaces to Determine If They're Hazardous**

- A. Failing to identify hazards and take precautions causes thousands of serious injuries, and sometimes deaths, in confined spaces.
- B. Certain hazards create permit-required confined spaces. OSHA allows work only with written permits, entry limits, and specific employee roles and practices in spaces with one or more of the following:
  - 1. Hazardous atmosphere, or potential for one
  - 2. Material that could potentially engulf a person in the space
  - 3. Slanting walls or sloped and tapering floor that could trap or asphyxiate an entrant
  - 4. Any other recognized serious safety or health hazard

**3. A Confined Space's Atmosphere May Make It Hazardous**

- A. Employees could risk death or serious illness, become incapacitated, or have trouble escaping if the confined space's atmosphere contains:
  - 1. Levels of flammable gas, vapor, or mist in excess of 10 percent of their lower flammable limits
  - 2. Airborne dust levels at or above their flammable limits or permissible exposure limits (PELs) or that prevent visibility of fewer than 5 feet
  - 3. Oxygen concentration above 23.5 percent or below 19.5 percent
  - 4. Any condition immediately dangerous to life or health that could threaten life, cause irreversible health problems, or make it difficult to escape the space without help

#### **4. A Confined Space's Atmosphere May Pose Fire, Explosion, and Toxicity Risks**

- A. Anything that could burn or explode (e.g., gasoline, methane, dust) is more likely to do so in a confined space.
  - 1. These substances can be ignited by smoking, grinding or welding sparks, unapproved electrical equipment, or metal friction (even from nails in shoes).
  - 2. Inhaling toxic substances above their PELs can cause illness, suffocation, or even death (e.g., from carbon monoxide, hydrogen sulfide, or sulfur dioxide).

#### **5. Too Much or Too Little Oxygen Is a Major Confined Space Hazard**

- A. Oxygen levels over 23.5 percent create a serious fire or explosion risk.
- B. Oxygen levels below 19.5 percent are a dangerous health risk:
  - 1. Sixteen percent can cause drowsiness and nausea; 12 percent, unconsciousness; 6 percent, death.
  - 2. Methane, carbon dioxide, nitrogen, corrosion, or rust can displace oxygen.

#### **6. A Confined Space May Be Hazardous Because of Engulfment Potential**

- A. A person could be covered, buried, or smothered in a space that contains a liquid, or a flowing solid such as sand or grain.

#### **7. A Confined Space May Be Hazardous Because of an Entrapping Design**

- A. If a space's walls curve in or its floors slope and taper down, you could:
  - 1. Slip or fall into a space that is too tight to escape from
  - 2. Get pushed into machinery in the space

#### **8. Confined Spaces May Have Physical Hazards**

- A. Heat can build up and create the danger of exhaustion or heat stroke.
- B. Falls can be fatal if you're trapped with a serious injury, are in a toxic or low oxygen area, or you can't get a foothold on floors or a grip on handholds to get out.
- C. Noise bounces off walls in a space, making it hard to hear directions or warnings and creating a risk of hearing damage.
- D. Power equipment creates injury, electrocution, fire, and explosion risks:
  - 1. That's why power is turned off, equipment locked out, and pipes and valves turned off, blocked and bled before spaces are entered.

### **Summation: Take Confined Space Permits and Precautions Seriously**

A hazardous confined space can be deadly unless the testing, entry limits, and safety precautions spelled out on the permit are followed.