Confined Space Entry Quick Reference Guide

Confined Space Definition

- Is large enough and so configured that a person can bodily enter and perform assigned work
- Has limited or restricted means for entry or exit
- Is not designed for continued human occupancy

A permit required confined space has one or more of the following characteristics:

- Has or may have a hazardous atmosphere
- May contain material that could engulf or asphyxiate someone
- May be designed in a way that could cause a person to become trapped
- May have any other serious safety or health hazard

Confined space entry occurs when any part of the body breaks through the opening. This means that even if you put just your head through the collar on the dome of a cargo tank to look inside, it is considered a confined space entry.

Every cargo tank that must be entered **before** cleaning is considered: **Permit Required Confined Space** Do not enter unless properly trained to do so.

Hazard Assessments

The Facility must:

- Evaluate indoor and outdoor work spaces to determine if there are any confined spaces
- Maintain a list of all spaces by location and type
- Label all confined and permit required confined spaces appropriately to restrict entry

Hazard Controls

The Facility must:

- Have a complete written Confined Space Entry program
- Provide a complete employee training program
- Maintain and use appropriate atmospheric testing meters
- Maintain and use correct Personal Protective Equipment (PPE)

Lighter than air gases such as Ammonia and Methane are detected at higher levels, while ***heavier*** than air gases such as Gasoline and Jet Fuel vapors will show at lower levels. Gases that are ***slightly heavier*** or ***slightly lighter*** than air are detected in the middle range. This is why it is so important to test the atmosphere at all three levels.

Normal concentration of oxygen (O_2) in the air we breathe is 20.9%

- **Less than 19.5%** or **Greater than 23.5% Can be Deadly**
- Meter reading goal before you enter a confined space = **Normal 20.9%**

When a flammable vapor or gas within a confined space reaches its Lower Explosive Limit (LEL*)

Meter reading goal before you enter a confined space: **LEL < 10%** **Best = 0%**

Of primary toxic concern in a cargo tank entry are:

- Carbon Monoxide (CO)
- Hydrogen Sulfide (H_2S)
- Meter reading goal before you enter a confined space:
    - **CO < 35 ppm***
    - **H_2S < 15 ppm***
    - ***0 ppm is Always Best**

Nitrogen is a huge concern for people working in and around cargo tanks:

- Always check the MSDS for Nitrogen
- Look for Nitrogen tags and identification
- Beware of Nitrogen blankets in cargo tanks
- Ask the driver if Nitrogen is present in the tank
- Always assume the cargo tank contains Nitrogen unless testing proves otherwise!
- Too much Nitrogen = Death

Before entering a confined space where no permit is required, the entrant must use a non-permit space entry form. This form:

- Must be posted at the entry point for the duration of the entry
- Indicates the acceptable atmospheric conditions
- Is kept at the Facility

Oxygen Rich or Deficient Exposure Symptoms

Taking deep breaths followed by a rapid heartbeat, poor muscle coordination, sudden fatigue, difficulty breathing, nausea and vomiting, and finally breathing spasms, convulsions, and death within minutes.

Toxic Exposure Symptoms

Tunnel vision, difficulty breathing, rapid heartbeat, a short attention span—meaning it is difficult to focus on the task at hand, poor muscle coordination, very poor judgment and confusion. This may be quickly followed by inappropriate feelings of joy or euphoria, ringing in the ears, nausea and jerking movements or spasms, irregular breathing and unconsciousness.

Two types of rescue teams are used for confined space entry emergencies:

- **In-house** rescue teams that must:
    - Receive specific emergency rescue training
    - Practice on an annual basis to retain skills
    - Be certified in first aid and CPR
- **Outside** rescue teams are usually from a local fire department