OSHA: Confined Spaces Overview

Key Takeaways:

– Recognizing characteristics and examples of a confined space.
– Evaluating hazards of confined spaces.
– Understanding the differences between permit-required and non-permit-required confined spaces.
– Comprehending the basic requirements of a permit-required confined space program.

Course Description

Confined spaces in the workplace are defined as enclosed or partially enclosed spaces of a size such that employees can squeeze entry for performing assigned work through a narrow opening; they’re cramped, tight spaces. Typically, you will only enter these areas to perform specific tasks before barricading them to prevent unauthorized access.

Consider the examples of storage tanks or bins, mixing tanks, railroad tank cars, silos, vaults, pits, or any large tank used for holding liquid. It may be the case that these big storage containers need to be cleaned out, so a worker to goes inside and they’re completely surrounded by walls of the structure, with only a small entry/exit hatch for escape if things go awry. Confined spaces are a nightmare for the claustrophobic. They may be large or small and above or below ground.

The Occupational Safety & Health Administration (OSHA) created a standard to better protect those who work in confined spaces in 1993. OSHA based this standard on the most effective practices for eliminating and controlling confined space hazards. In their explanation, OSHA stated that repair, maintenance, cleaning and inspection activities account for nearly 25% of confined space related fatalities, with construction and manufacturing industries experiencing the most fatalities.

Numerous confined spaces are poorly ventilated, which leads to the release of vapors that are safe in the open air creating an oxygen-deficient, toxic, combustible, or otherwise harmful atmosphere. These types of atmospheres are able to cause immediate asphyxiation, acute and chronic poisoning, or impairment that can result in injury. The leading cause of death in confined spaces is asphyxiation. Confined spaces are also capable of posing the hazard of asphyxiation or other injury from engulfment in the materials inside (i.e. grain or sawdust within a silo).

If several unexpected situations develop, confined spaces can kill.

A lack of oxygen is one highly probable factor contributing to confined space accidents. A situation like this occurs when the air in a confined space is consumed

by chemical or biological reactions, diluting the amount of oxygen in the immediate atmosphere to below 21%, increasing negative physiological responses as that percentage declines.

Another killer in confined spaces is oxygen displacement. This occurs when inert gas concentration is high enough to remove oxygen from the chamber, essentially replacing the normal air we breathe with colorless, odorless gases like nitrogen or carbon dioxide, and creating a situation of complete suffocation for workers.

More likely problem situations to consider involve flammable atmospheres, toxic gases, and solvents: each poses different, specific hazards that have killed high-risk workers in the past.

In addition, there are other potential hazards: sloped, tapered, or inwardly converging walls in a confined space, such as a discharge pipe, can pose the hazard of asphyxiation from compression of the chest to workers who slip and fall into them. Being caught between or under objects in a space can also lead to confinement.

For employees, there can also be exposure to extreme noise, heat, or cold in a confined space and that may introduce hazards just because of the tools they bring into such an environment. Welding certain materials are able to create fire hazards and cleaning the inside of tanks with solvents may create a toxic atmosphere, for example.

Confined spaces have two classifications: “non-permit required” or “permit required.” A non-permit required confined space is a enclosed space that does not pose life, health, or safety hazards. Many permit-required confined spaces could contain hazardous atmospheres because of their very nature and configuration.

An confined space that requires a permit:
– Houses or has the potential to produce a hazardous atmosphere
– Has a material that can engulf someone who enters the space
– Is configured internally in a way that might cause an entrant to be trapped or asphyxiated
– Has other recognized serious safety or health hazards

A company’s Permit-required Confined Space Entry Program is the overall policy and plan for protecting every employee and contractor from confined space hazards, in addition to regulating entry into permit-required spaces. When a job site has permit-required confined spaces and workers are authorized to enter them, employers must develop, implement, and update this program. As well, the company must enforce and periodically evaluate their Confined Space Entry program.