Toolbox Safety Talks for Mechanical Construction Workers – Volume VI

TOPIC: Confined Spaces – Common Gases/Hazards #9

PRIMARY POTENTIAL HEALTH AND PHYSICAL HAZARDS

- INSUFFICIENT OXYGEN – ASPHYXIATION – SUFFOCATION
- TOXIC AIR CONTAMINANTS – IMPAIRMENT – INCAPACITATION – DEATH
- FLAMMABLE GASES & VAPORS – FIRES & EXPLOSIONS

PRIMARY EXPOSURES FOR MECHANICAL CONSTRUCTION WORKERS

- Entry into pipelines, ductwork, equipment housings, boilers, manholes, sewers, vaults, tunnels, shafts, vessels, pits, tanks, etc. that have limited or restricted means for entry or exit and are not designed for continuous human occupancy
- Hot work inside a confined space that could change what would otherwise be acceptable atmospheric conditions to hazardous atmospheric conditions

COMMON HAZARDOUS GASES/ISSUES IN MECHANICAL CONSTRUCTION

- Oxygen – Levels in confined spaces must be between 19.5% and 23.5%. Levels below 19.5% can lead to immediate organ damage and ultimately death. Also, since oxygen accelerates the rate of combustion, levels that are too high can make the space more susceptible to fires and explosions.
- Methane – Is highly flammable (it is the main constituent of natural gas). Methane is not considered to be toxic. However, it can displace oxygen in the lungs leading to asphyxiation and suffocation.
- Carbon Monoxide – Prevents efficient exchange of oxygen in the circulatory system and can be fatal.
- Hydrogen Sulfide – Is highly flammable, and is considered a toxic substance. It is an irritant that can cause respiratory failure over time if it goes undetected.

SAFE WORK PRACTICES

- Continuously monitor the atmosphere inside the space for hazardous gases.
- Use an appropriate, properly calibrated monitoring instrument with a built-in hazard detection alarm. If the alarm system(s) activates, evacuate the space immediately.