

Potential Hazards Involved with Confined Space Entry

Oxygen Deficient Atmosphere - Any oxygen concentration less than 19.5% may result in some physical impairment and less than 16% may cause permanent injury or death. Oxygen deficient atmospheres are also referred to as asphyxiating atmospheres.

Oxygen deficiencies can be caused by displacement of oxygen with another gas, by absorption materials such as activated charcoal, by bacterial action in areas containing moisture and organic matter such as sewers, or by consumption during chemical reactions such as formation of rust on exposed surfaces, welding, cutting, brazing.

Flammable Atmosphere - A flammable atmosphere can be created by any of the following conditions alone or in combination: vaporization of flammable liquids, enriched oxygen atmospheres greater than 23.5%, chemical reactions, or high concentrations of combustible dusts. An explosion or fire may result from a flammable atmosphere.

An atmosphere is considered to be flammable if a flammable gas or vapor is present at a concentration greater than 10 percent of its lower flammable limit or if a combustible dust is present at a concentration greater than or equal to its lower flammable limit.

Presence of Hazardous Chemicals - Poisonous or corrosive materials, some of which have poor warning properties, can be fatal or cause serious injury in very low concentrations (e.g., CO, H₂S). Specialized knowledge of the confined space is necessary to determine if this kind of potential hazard could exist.

Electrical Hazards - Possible activation of electrical equipment could cause serious injury or death. Lockout/tagout must be considered.

Physical Hazards - Non-chemical physiological stresses such as heat, cold, noise, vibration, activation of mechanical equipment and radiation may cause injury and should be evaluated prior to entry.

Entrapment - A small area or internal configuration such as baffles in horizontal trays, bends in tunnels, or overhead structural members may entrap employees or make rescue and removal of an incapacitated worker more difficult.

Engulfment - In areas where loose particulate matter is present, the risk of engulfment and suffocation is possible. Changes in matter should be anticipated from exposure to sun, water, or freezing temperatures, heavy equipment, overlying material, and vibration.