



## CONFINED SPACE ENTRY

**Introduction:** Confined spaces present unique and potentially life-threatening hazards. A confined space is defined as an area with limited or restricted access that is not intended for continuous occupancy, such as tanks, sewers, pits, ducts, or manholes. These spaces often contain dangerous conditions like toxic gases, low oxygen levels, or engulfment hazards, making confined space entry one of the most dangerous tasks on a construction site. Understanding the risks and following proper safety procedures are crucial for ensuring that workers remain safe when entering and working in confined spaces.

### Key Hazards in Confined Spaces:

- **Oxygen Deficiency:** Many confined spaces lack adequate ventilation, which can lead to dangerously low levels of oxygen.
- **Toxic Atmospheres:** Harmful gases, vapors, or fumes may accumulate in confined spaces, causing poisoning or asphyxiation.
- **Flammable or Explosive Atmospheres:** The buildup of flammable gases or vapors can create a risk of explosion.
- **Engulfment Hazards:** Workers can be trapped or suffocated by loose materials such as sand, grain, or water.
- **Limited Access:** Restricted entry and exit points can delay rescue efforts in the event of an emergency.

### Steps for Safe Confined Space Entry:

- **Conduct a Confined Space Assessment:** Identify whether the space is a confined space and assess the potential hazards. Determine if the space requires a permit for entry based on the level of risk involved. Review the history of the confined space, including any prior hazards or incidents.
- **Obtain and Follow a Permit (For Permit-Required Confined Spaces):** Ensure that a confined space entry permit is completed and approved before anyone enters the space. The permit outlines the hazards present, the precautions to be taken, and the emergency rescue procedures. Ensure the permit is posted at the confined space entry point.
- **Test the Atmosphere Before Entry:** Use gas detectors to check for oxygen levels, toxic gases (such as hydrogen sulfide or carbon monoxide), and flammable gases. Ensure oxygen levels are between 19.5% and 23.5%, and check that the air is free of dangerous concentrations of toxic or flammable substances. Continuously monitor the atmosphere while workers are in the confined space.
- **Ventilate the Space:** If hazardous gases are detected or oxygen levels are too low, ventilate the confined space using blowers or fans to introduce fresh air. Never enter a confined space unless it has been adequately ventilated, or the atmosphere is deemed safe by monitoring equipment.
- **Use Proper PPE:** Workers entering confined spaces should wear the necessary personal protective equipment (PPE) based on the hazards present. This may include:
  - Respiratory protection (such as supplied-air respirators) if air quality cannot be controlled.
  - Full-body harnesses with lifelines for easy retrieval in case of an emergency.
  - Protective clothing, gloves, and eye protection to shield against toxic substances or physical hazards.
  - Ensure all PPE is inspected and fitted correctly before entering the space
- **Have a Trained Attendant:** A trained attendant must be stationed outside the confined space at all times to monitor conditions and communicate with workers inside. The attendant should never enter the confined space to perform a rescue unless properly equipped and trained to do so.
- **Establish Emergency Procedures:** Before entry, ensure that emergency rescue equipment is on hand, such as retrieval devices (tripods, winches) and first aid supplies. Practice emergency evacuation drills regularly to ensure workers are familiar with rescue procedures. In the event of an emergency, the attendant should alert rescue personnel and initiate a safe retrieval process.

### Follow Entry and Exit Procedures:

- Only authorized and trained personnel should enter confined spaces.
- Maintain open communication between workers inside the space and those outside.
- Workers should leave the confined space immediately if conditions become unsafe or if instructed by the attendant.

**Good Housekeeping and Equipment:** Keep the confined space clear of unnecessary materials or tools to prevent clutter and ensure quick exit in an emergency. Make sure all equipment used inside the space is in good working condition, and only use explosion-proof or intrinsically safe tools if working in potentially flammable atmospheres.

### Common Confined Spaces in Construction:

- Storage tanks, silos, and vats
- Underground utility vaults, manholes, and sewers
- Pits, trenches, or shafts
- Boilers, ducts, or tunnels

### Discussion Topics:

- Have you encountered any confined spaces on this job site? What precautions were taken?
- What hazards do you think could exist in confined spaces, and how can we control them?
- Are you familiar with the procedures for entering a confined space, and do you know how to read and follow a permit?

**Takeaway:** Confined spaces are inherently dangerous, but by following proper safety protocols—such as assessing the space, monitoring the atmosphere, wearing the correct PPE, and maintaining good communication—we can protect ourselves and our coworkers. Always prioritize safety, never cut corners, and ensure that proper procedures are in place before entering any confined space. Remember, the risks are high, and taking every precaution can prevent serious injury or death.

