

Confined Spaces

Confined spaces may be encountered in any industry and their recognition is the first step in preventing fatalities and injuries.

Confined Spaces Can Be Deadly

Entering a confined space without following all required procedures and having an effective emergency rescue plan can result in serious injuries or death. More than 60% of confined space fatalities occur among would-be rescuers.

- **Recycling Center:** Two brothers, aged 16 and 22, died in an underground drainage system when the younger brother was overcome by hydrogen sulfide and his brother rushed to the rescue and was overcome as well.
- **Commercial Laundry:** One worker died of traumatic asphyxia when he was unloading a large horizontal washer and was pulled into the space and crushed when the washer was inadvertently activated.
- **Pharmaceutical Plant:** One worker died and two co-workers seriously injured. The first worker died when he entered a large reactor vessel in which nitrogen had displaced oxygen. Two other workers were injured when they attempted to rescue the first worker.

What Is A Confined Space?

The definition can vary depending on which Cal/OSHA confined space regulation applies to the type of industry and operation. In most manufacturing and construction workplaces, a confined space is a space that has the following characteristics:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means for entry or exit.



3. Is not designed for continuous employee occupancy.

These types of spaces can become permit-required confined spaces if they also have one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazard.



Examples of confined spaces include: water and sewer pipes, pumping stations, manholes, boilers, vats, kilns, vaults, silos, storage bins, meter vaults, tunnels, tanks, wastewater wet wells, grit chambers, utility tunnels, crawl spaces under floors, water reservoirs, holding tanks, pits, and sumps.

Why Are Confined Spaces Deadly?

Confined spaces are deceiving and often appear to be harmless. Danger signs (such as dead animals, rusting walls, and odors) are often not apparent and the space may have been entered before without incident. Never assume that conditions have not changed and that the space is always safe for entry.

How Can Work Be Done Safely in Confined Spaces?

1. When possible, avoid entering these spaces by using procedures, devices or equipment that allows work to be done from the outside.
2. If they must be entered, Cal/OSHA has regulations for working safely in confined spaces.

Refer to the specific regulations for your industry and operations:

- For general industries such as manufacturing facilities, Title 8 California Code of Regulations (T8CCR) section **5157, Permit-Required Confined Space** requirements apply. Also review the **Cal/OSHA Guide for Confined Spaces in General Industry**.
- For employers and employees in the construction trades, the regulations in T8CCR section **5158, Other Confined Space Operations** and Article **37 Confined Spaces in Construction** apply.
- T8CCR section 5158 **Other Confined Space**

Operations also apply to employers and employees in:

- Construction: section **1502**
- Agriculture: section **3437**
- Marine Terminals: section **3460**
- Grain Handling: section **5178**
- Telecommunications: section **8616**
- Natural Gas and Electric Utilities: Title 49 Code of Federal Regulations Parts **191, 192, and 193**
- Shipyard Operations: section **8355**

Also refer to the requirements for the isolation and control of certain physical hazards, such as lockout/blockout/tagout (LOTO) procedures:

- Electrical Safety Orders sections **2700, 2943(b), and 2943.1**
- General Industry Safety Orders section **3314** Cleaning, Repairing, Servicing and Adjusting Prime Movers, Machinery and Equipment

In general, the confined space regulations require employers to have a written confined space plan that outlines the operating procedures that include, but are not limited to:

- Recognizing and identifying confined spaces in the workplace.
- Effective controls of all existing and potential hazards inside the confined space.
- Procedures to determine when it is safe to enter and remain within the confined space.
- Procedures to prevent unauthorized entries and to have an attendant outside the space.
- Employee and supervisor training on safe work procedures, and hazard controls.
- Effective rescue procedures and training.



This document is available with active links at www.dir.ca.gov/dosh/dosh_publications

For assistance regarding this subject matter, employers may contact

Cal/OSHA Consultation Services at 1-800-963-9424 or InfoCons@dir.ca.gov

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