Don't Be Confined to Hazardous Spaces

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Every year workers die in confined spaces. These deaths typically occur because either the employer or workers failed to recognize and control the hazards associated with the space or because of the inadequate or incorrect emergency response of the initial entrant, the would-be rescuer, or both.

For the construction, agriculture, and a few other industries, Cal/OSHA has developed a regulation covering confined space entry that can be found in Title 8 of the California Code of Regulations under Section 5158. Please note that Section 5158 is significantly different than Section 5157 which covers confined space operations for general industry. Cal/OSHA defines confined space as "a space with the concurrent existence of the following conditions: existing ventilation is insufficient to remove dangerous air contamination, oxygen enrichment, and/or oxygen deficiency which may exist or develop" and where "ready access or egress for the removal of a suddenly disabled employee is difficult due to the location and/or size of the opening(s)."

The regulation considers a dangerous air contamination to be a concentration of flammable gas or vapor that is greater than 20 percent of its lower explosive limit (LEL), a concentration of combustible particulate greater than 20 percent of the minimum explosive concentration of the particulate, and/or a concentration of a toxic substance that is immediately hazardous to life or health. It describes a hazardous oxygen level as either **oxygen deficiency** – an atmosphere containing less than 19.5% oxygen or **oxygen enrichment** – an atmosphere containing more than 23.5% oxygen.

If your worksite contains a possible confined space hazard, you must develop written operating and rescue procedures that conform to Cal/OSHA's standard requirements. You must provide those procedures to your affected employees and train employees in operating and rescue procedures, along with the hazards they may encounter. The procedures must also include coordinating activities with the operations of other employers both inside and outside the space.

Cal/OSHA requires that the following pre-entry procedures must be addressed and followed, as applicable:

- disconnecting, blinding, or blocking off lines which may distribute flammable, injurious, or incapacitating substances
- emptying, flushing, and purging the space of flammable, injurious, or incapacitating substances
- testing the air for dangerous air contamination and unacceptable oxygen levels prior to entry and periodically thereafter
- ventilating the space
- the introduction of ignition sources
- the use of oxygen-consuming equipment
- provisions for ready entry and exit
- deactivation of automatic fire suppression systems in the space

Safe entry procedures must also be followed if an atmosphere free of dangerous air contaminants, oxygen deficiency, or oxygen enrichment cannot be ensured. If this is the case on your worksite, your procedures must include, as appropriate: side entry vs. top entry; respiratory protection; safety harnesses and hoists; a standby employee outside the space; an additional employee outside the space; an independent source of breathing air for the standby employee; prohibition of work involving ignition sources; proper use of inerting gases; atmospheric testing; the use of approved lighting and electrical equipment; appropriate personal protective equipment (PPE); the availability of person(s) trained in first aid and CPR; and an effective means of communication.

If you hire contractors to enter a confined space, you must inform the contractor of the space hazards and that a confined space program is required for entry into the space, and you must debrief the contractor at the conclusion of entry operations. All joint entries must be coordinated and entries must also be coordinated with work near the space. Although, Cal/OSHA's confined space regulation does not address physical hazards, such as moving parts in mechanical systems, release of stored energy in hydraulic or pneumatic lines, electrical energy, and engulfment by loose materials, these hazards must also be controlled. Requirements for addressing these and other safety issues can be found in other sections of the Cal/OSHA regulations. For the complete Cal/OSHA requirements, visit the Department of Industrial Relations website at www.dir.gov. ❑