Regulatory Compliance

Keeping Workers Safe in Confined Spaces

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What You Need to Know

Confined spaces are large enough for workers to enter, with limited means of entry and exit, but are not designed for continuous occupancy.
OSHA's Permit-Required Confined Spaces standard lays out steps facilities must follow to keep workers safe.
In 2015, OSHA added a confined spaces standard aimed specifically at the construction industry.
The new rule clarified several issues for the general industry standard, including alternate entry requirements.
PPE can protect workers from some of the hazards present in confined spaces, but identifying those hazards is critical.

What are the safety regulations for working in confined spaces? What personal protective equipment do you need? Read on to find out.

Whether they're entering them for maintenance or another task, small places like tanks, ducts and crawl spaces can be hazardous for workers. An average of 92 fatalities occur every year due to confined spaces, with the most frequent cause of death being asphyxiation or a lack of oxygen. According to ***a study of worker deaths in confined spaces***, only 6 percent of those killed had received safety training specific to confined spaces.

When Do I Need a Confined Space Permit?

The ***Occupational Safety and Health Administration (OSHA) says*** a confined space is one that:

- Is large enough for workers to enter
- Has limited means for entry or exit
- Is not designed for continuous occupancy

A confined space permit is needed when a space that presents hazards, or has the potential to present hazards, to workers who enter it. These include a hazardous atmosphere (air contaminants or too little

or too much oxygen), material that could engulf a person, walls that taper into a smaller area that could cause entrapment or asphyxiation, unguarded machinery, exposed live wires and heat.

"If a worker will be accessing a confined space with any of these circumstances, the employer is responsible for developing a written safety program to comply with OSHA standards prior to starting any work," ***writes Rick Argudin***, a senior training specialist for 3M's Personal Safety Division, in an OH&S article.

However, not all confined spaces require permits, notes Sandy Smith, EHSQ content and community lead at Intelex Technologies Inc., in an ***EHS Today article***: "If appropriate air quality monitoring has been conducted and the atmosphere does not contain hazards that could cause death or serious physical harm to employees, then the space would be considered a non-permit confined space."

When Calling 911 Is Not Enough

In its regulation for permit-controlled confined spaces, ***29 CFR 1910.146***, the Occupational Health and Safety Administration requires employers to list the "rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services."

In an ***article for EHS Today***, Adam O'Connor and Jeff Tomb, veteran fire department members in Indiana, caution that companies should not rely on 911 responders to perform their rescues.

"Most workers enter confined spaces with the expectation that they will be rescued if something goes wrong," O'Connor and Tomb write. "But if a crew's only rescue plan is to call 911 in the event of a problem, that rescue may not be possible."

According to the firefighters, most people who die in confined spaces do so because of a lack of oxygen. That means rescuers have only 4-6 minutes to provide oxygen before the worker begins to lose brain function.

"People die in confined spaces because there is no true rescue team on the scene, and many times because 'Call 911' is the only rescue plan," they write. "More likely than not, if a person is not breathing, we are not going to get to the scene and affect a rescue in time to save the victim without violating OSHA law and putting our own lives at risk."

The OSHA regulation requires that the facility needs to select a rescuer who is:

- Able to perform a rescue in a "timely" manner
- Equipped with the necessary tools to perform a rescue in the specified type of confined space
- Proficient with rescue-related tasks and equipment

Chris Koester, owner of Priority One Safe-T LLC, an emergency response services and rescue training firm for industrial and manufacturing companies, says local fire departments may also lack the technical training or equipment to perform rescues.

"For permit-required confined spaces, OSHA requires employers to develop and implement procedures and have a rescue team proficiently trained and equipped on site for rescuing entrants and preventing unauthorized personnel from attempting a rescue," Koester says in an OH&S article. "A rescue team on site at your facility prior to entry is not just critical, but is required in 1910.146."

Confined Space Safety Precautions and Regulations

Procedures and practices in the OSHA Standard ***29 CFR 1910.146 Subpart J, Permit-Required Confined***

Spaces include evaluating workplaces to determine if permit spaces exist and informing employees of where they are. Employers must either prevent workers from entering the confined space or, if employees are expected to enter the space, develop a written confined space permit program.

"A strong confined space safety program should be structured around one common goal: workers' safety and health," Argudin says. "The written program needs to discuss the means, procedures and practices used to eliminate or control hazards and to ensure safe operations. In addition to preventative measures, the program should discuss air quality monitoring, exit and entry methods, and ***fall protection/rescue systems***."

The entry permit must include details about the space to be entered, as well as the names of those allowed to enter it, the results of any tests establishing its safety, sign-offs from the tester and a supervisor, the name and contact information of rescue services, and more. The standard also requires an attendant to be outside the space for the duration of the entry.

Having the right fall protection systems in place is not enough. Given that ***fall protection*** ranks at the very top of OSHA violations, the agency added a rule on training for fall protection in 2017. Companies have noticed that OSHA has been handing out violations on training since that law went into effect. It ranks ninth in the OSHA Top 10 list from 2017.

Not sure if your fall protection training program is in compliance? Read "5 Must-Know Tips for Fall Protection Training."

2015 Updates to OSHA's Confined Space Safety Standards

In 2015, OSHA added a ***confined spaces standard*** for the construction industry (CFR 29 1926 Subpart AA Confined Spaces in Construction). According to ***EHS Daily Advisor***, the new standard addresses multiemployer work sites, establishing which entities are responsible for keeping workers safe when employers and contractors share a site. It also requires the designation of a qualified person to evaluate the site and identify confined spaces, and requires employers to monitor for atmospheric hazards, engulfment hazards and changing entry conditions. OSHA created a ***compliance guide*** for small businesses to help explain aspects of the regulation.

With the new rule, OSHA also clarified existing requirements for general industry, addressing alternate entry requirements, emergency rescue services and training:

- If employers want workers to enter a confined space without a complete permit, they are required to prevent exposure to physical hazards, either by eliminating the hazard or using isolation methods such as lockout/tagout.
- When relying on outside emergency services for rescue, employers will need to arrange for responders to give advance notice if they are unable to respond for a period of time.
- Employers are required to train workers on confined space safety in a language and vocabulary the workers understand.

You can learn more about confined space safety standards, and read related compliance directives and letters of interpretation on OSHA's ***Confined Spaces webpage***.

> **"A strong confined space safety program should be structured around one common goal: workers' safety and health."**
> Rick Argudin
> Senior Training Specialist, 3M Personal Safety Division

PPE for Confined Spaces

Under the OSHA standard, employers are required to provide and maintain any personal protective equipment (PPE) employees need to safely work in a permit space when engineering and work practice controls are not sufficient protection. If a facility designates employees to provide rescue and emergency services to permit spaces, then PPE must be provided for that purpose as well.

A critical first step is identifying the hazards present. According to the standard, the confined spaces permit form must list the types of hazards that could be encountered in the specified permit space. If those hazards cannot be eliminated or controlled, workers should use PPE to address them. The PPE needed should also be listed on the permit.

A ***sample permit*** from OSHA has room to list fall hazards, chemical hazards, electrical hazards, mechanical hazards, respiratory hazards, skin hazards, heat/cold hazards, noise hazards and snake, rodent, animal and insect hazards. "PPE may include eye protection, hearing protection, hand protection, hard hats, chemically treated protective garments, and respiratory protection, including self-contained breathing apparatus (SCBA) if necessary," ***writes OSHA***.

In addition, OSHA rules require anyone entering a confined space where the entrance is more than 5 feet overhead to wear a ***safety harness*** and lifeline and be attached to a mechanical retrieval system. Workers entering a confined space of less than 5 feet in height with a potentially hazardous atmosphere should wear a harness and lifeline that is monitored by an attendant.

How does your company train employees for work in permit spaces? Share your experiences.