

When is a Space Not Confined?

Chris Marlowe, CIH, QEP
Camp Dresser & McKee Inc.

Every manager in the water and wastewater fields understands that confined spaces are dangerous. They recognize that the OSHA standards that apply to those spaces provide valuable protection to employees. The same managers feel that these standards can really slow down work progress. Knowing when the confined space safety procedures don't apply, therefore, can significantly affect work efficiency.

Three Characteristics of a Confined Space

The OSHA standards impose safety procedures only on entries into permit-required confined spaces (PRCSs). No space can be a PRCS, unless it's first a confined space. A confined space is any work space that is 1) big enough to enter, 2) not designed for continuous employee occupancy, and 3) hard to enter or exit. The preamble to OSHA's 1993 PRCS standard clearly stated that all three criteria must be met in order for a space to be considered "confined." (Federal Register Volume 58 No. 9 p 4477). Each of these elements is so important, that we will discuss them separately.

Big Enough to Enter

A space is "big enough to enter" when your whole body would fit both 1) inside the space, and 2) through the opening. The first part of this definition indicates that no matter how bad the air is in a five-gallon pail, that pail is not a confined space because your body would not fit inside. The second part of the definition means that no space is "confined" if every opening into it is covered with a welded grate through which your body can't enter.

OSHA's definition that "Entry occurs as soon as any part of the entrant's body breaks the plane of an opening into the space," appears to conflict with this definition, but the definition of confined space takes precedence. For example, if you often wash a sludge silo down with a hose, you have to put your hand inside. According to the policy, that's entry. You need a permit for that work. If you weld rebar across the opening on six - inch centers, the same behavior is not entry, and the task can be done by one person without a permit.

Not Designed for People

A space is "not designed for continuous employee occupancy," when it's

1. Designed to ever hold dense material (water, sludge, sand, polymer),
2. Lacking heat, light, & ventilation required by applicable building codes,
3. Too short to stand up in, or
4. Too disgusting for you to put your desk in and work a whole day.

One of our clients had a pump station dry well, which met each of the other aspects of OSHA's definition, but had continuously operating heat, light, and ventilation. It was also a very clean work area. We determined that the dry well was 1) designed for occupancy, and therefore, 2) not a confined space, and therefore, 3) not a permit - required confined space.

If you have underground vaults that house valves, gauges, or electrical equipment, you should ask, "What would it take to make the vault, 'designed for occupancy?'" The second question you should ask is, "Is it worth it?" The answer will often be, "No."

Hard to Enter & Exit

A space is "hard to enter and exit," when you can't walk normally on the way in and out. The preamble discussed above establishes that "Doorways and other portals through which a person can walk are not limited means for entry or exit." (Federal Register Volume 58 No. 9 p 4477). When analyzed under this rule:

- a. Doorways are Easy, if they are taller than the employee
- b. Stairs are Easy, if they meet the OSHA standards
- c. Ladders, including ship ladders, are Hard,
- d. Hatches are Hard
- e. Crouching is Hard
- f. Crawling is Hard

OSHA has determined (Interpretive Quip -WTaylor 951027) that "The use of a temporary stair meeting the specifications for a fixed industrial stair, securely installed, would provide an unrestricted means of entry or exit." OSHA Standard 29 CFR 1910.24, for Industrial Stairs, requires stairways to have:

- a. Steps at least 22" wide
- b. A slope between 30° and 50° above the horizontal
- c. At least 8" of Slip Resistant Tread
- d. Vertical Clearance of 7'
- e. Platforms or landings at least 30" on One Side
- f. Railings between 30" and 34" high.

At many plants, the specific design of the stairway becomes an issue. At one plant we found that the stairs on the wet well had:

- a. Treads 30" wide and 10" deep
- b. A slope of 39°
- c. One landing 29.5" x 31"
- d. A handrail 33" high.

Because the stairs on this wet well meet the OSHA standard, the well is not a confined space, and, therefore, not a permit-required confined space.

Note that spaces that don't meet this definition can still harbor hazards. Managers should still take appropriate action to control whatever hazards are present. These regulatory gymnastics should be used only to avoid regulation - driven efforts after practical safety is assured. We often use the OSHA procedures in hazardous spaces where the regulations don't literally apply, because they make sense.

Permit - Required Confined Spaces

OSHA safety procedures apply only to permit-required confined spaces. A PRCS is a confined space that has hazards such as; dangerous air, entrapment, engulfment, or unguarded machinery. Some confined spaces that have no demonstrable hazards include:

1. Many dry wells,
2. Many vaults that house;
 - a. Valves,
 - b. Meters, or
 - c. Wells,
3. New Sewers without;
 - a. Connection,
 - b. Gassy soil,
 - c. Concrete sealant, and
 - d. Water on the invert.

Air-only Permits

Careful reading of the OSHA definitions is not the only way to reduce the cost of confined space entry. Subparagraph 29 CFR 1910.146 (c)(5)(i) of the PRCS standard allows the use of "alternate procedures" when:

1. Bad air is the only hazard,
2. Ventilation alone is sufficient to control that hazard,
 - a. Monitoring & inspection proves that sufficiency, and
3. Entrants follow a special permit that provides for:
 - a. Barriers to prevent accidental falls,
 - b. Continuous forced air ventilation,
 - c. Periodic testing of air quality, and
 - d. Employers to certify the lack of hazards.

Because employer certifications must be backed up with facts that support the determination, you still produce a permit, but a kinder, gentler, permit. In general, my employer has found few spaces where producing an air-only permit was worth the trouble. Consider the spaces in your plant. Would any qualify for an air-only permit? Would the effort saved repay the effort involved in making the decision to justify and certify the finding?

“Low Hazard” Permits

Subparagraph 29 CFR 1910.146 (c)(7)(i) of the PRCS standard also allows the use of “alternate procedures” when 1) No actual or potential atmospheric hazards are present and 2) all hazards within the space have been eliminated. The hazards that normally drive this decision include potentials for flow, energy, or mechanical motion. OSHA’s definition of hazard elimination does not include lock-out. For flow, for example, they expect “double block and bleed.”

My employer rarely takes advantage of this subparagraph to avoid producing permits altogether. We often produce “low-hazard” permits for spaces like clarifiers, power vaults, and aeration basins. These “low-hazard” permits document that no potential air hazards exist and that all hazards are in control.

Even when the exemptions we have discussed would allow one person to work in a confined space alone, it’s rarely a good idea. Our low-hazard permits often show that no single accident can befall more than one person at a time. That finding allows the use of a “buddy,” instead of an “attendant.” The buddy normally enters the space to work with the entrant, which often speeds the project.

Summary

Contrary to common belief,

1. Many small spaces are not “confined” under OSHA’s rules,
2. Many large, but sub-surface, spaces are,
3. Work in many confined spaces requires no permit, and
4. Special, less-stringent permits will suffice for many confined spaces

Author Information

Paper Title Strategies for Code Compliance

Speaker Christopher SE Marlowe
Corporate Health and Safety Manager
Camp Dresser & McKee Inc.
Raritan Plaza One
Edison, NJ 08837
732 / 590 - 4632 (**phone**)
732 / 225 - 7851 (**fax**)

Biography

Chris Marlowe is a Certified Industrial Hygienist and Qualified Environmental Professional who specialize in health and safety, emergency response, and accident investigation. He develops corporate safety manuals, designs and presents health and safety training programs, and performs site safety audits. As CDM's health and safety manager, he provides health and safety support to scores of water and waste water authorities, usually in problem situations, but also on day to day operations.