

Fact Sheet

Confined Space Entry

Confined spaces, more formally known as “Permit-Required Confined Spaces,” are spaces such as manholes, pits, tanks, mixers, etc. into which employees may enter and perform work. These spaces may contain life-threatening hazards including explosive, oxygen-deficient, or toxic atmospheres.

Introduction

Permit-Required Confined Spaces (PRCS) can contain deadly hazards for employees who enter them for any reason or duration.

Permit-Required Confined Spaces include but are not limited to sewers, digesters, crawl spaces, tunnels, manholes, utility vaults, pumping stations, storage tanks, process vessels, pits, vats, and vaults.

Applicable OSHA regulations

At one time, MNOSHA enforced its own confined space regulation, but in general industry settings, this rule has now been eliminated in favor of the Federal version. MNOSHA still enforces the state confined space rule for construction. In short, general industry employers must comply with the Federal permit-required confined space regulation, not the MNOSHA version.

Grain storage structures are not covered under the permit-required confined space regulation. These structures are covered by OSHA’s grain handling safety regulation. For further information, see the Fact Sheet on [The Grain-Handling Safety Regulation vs. the Permit-Required Confined Space Regulation](#).

Definition of “confined space”

A confined space is any space that:

- Is large enough to bodily enter and perform assigned work; and
- Has limited openings for entry and exit (for example, entrants must climb a ladder or change the position of their bodies to enter/exit); and
- Is not designed for continuous employee occupancy.

OSHA does not regulate confined spaces, unless the space also meets the definition of “permit-required confined space” below.

Permit-Required Confined Space

A PRCS is a confined space (see above), which also has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that can cause the engulfment of an employee;
- An internal configuration that might cause an employee to be trapped or asphyxiated by inwardly converging walls or by a floor

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that slopes downward and tapers to a smaller cross section; or

- Contains any other recognized serious health or safety hazard such as moving parts, exposed electrical parts, temperature extremes, etc.

Identifying, evaluating, and developing an inventory of confined spaces

The first step in complying with the regulation is to evaluate all work areas and determine if there are PRCS as defined above.

If so, the spaces must be evaluated to identify the hazards that are or may be present. The results of this evaluation are used to create an inventory of PRCS, and to develop written entry procedures.

If there are PRCS in the workplace, exposed employees must be informed of their presence and location. Steps must also be taken prevent unauthorized entry into these spaces. Signage reading “DANGER: CONFINED SPACE. AUTHORIZED ENTRANTS BY PERMIT ONLY” or similar wording must be posted at each entry port.

Classification

Based on results of the space evaluation, each PRCS will be assigned one of three classifications:

- **Type 1.** These are PRCS that do not meet the definition of type 2 or type 3. Type 1 spaces generally have multiple hazards, including hazardous atmospheres. Type 1 is usually the most hazardous type of PRCS

and requires the most rigorous procedure development, permit use, rescue plans, etc.

- **Type 2.** These are PRCS in which the only hazard is a hazardous or potentially hazardous atmosphere for which there is formal, documented, objective evidence (i.e., a history of air monitoring data) that the hazardous atmosphere can be controlled through positive forced air ventilation. This classification is based on 29 CFR 1910.146(c)(5).
- **Type 3.** These are PRCS which have no potential for a hazardous atmosphere, and in which all other hazards of the space can be temporarily and positively eliminated without entering the space (for example, locking out augers, mixers, etc.). Use of forced air ventilation to control hazardous atmospheres does not constitute elimination of hazards. In essence, these spaces are temporarily reclassified from permit-required to non-permit required during the entry. This classification is based on 29 CFR 1910.146(c)(7)

Note: In the OSHA Permit-Required Confined Space regulation, OSHA does not provide names or titles for these various classifications. To avoid confusion, we have provided these designations (type 1, 2, 3). These classifications will not appear in any search of the regulation.

Proper classification of PRCS will often require use of prudence and judgment, as hazards will often not be immediately obvious. However, the proper classification of PRCS is essential because nearly all aspects of confined space safety will depend, to some degree, on the classification of the space.

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Determining whether employees will enter

Once all spaces have been identified, evaluated, and classified, employers must determine whether employees will be permitted to enter the space. If so, employers must take steps to comply with all OSHA requirements such as developing permits, procedures, etc.

If it is decided that employees will not enter, full compliance will not be necessary.

Several factors must be considered in determining if employees will be allowed to enter or not. One important consideration will be whether it is even possible to comply with the regulation. The most difficult aspect of compliance is usually related to rescue requirements, described later in this Fact Sheet.

Because compliance is so difficult, we recommend that serious consideration be given to not permitting entry into confined spaces, and instead, relying on contractors to provide required work whenever feasible.

Entry procedures

Regardless of the classification of the PRCS, some type of written procedure development will always be required. Procedure content may include, but is not limited to:

- Identifying the known hazards of the space, and acceptable entry conditions.
- Steps for atmospheric monitoring and ventilation.

- Procedures for isolating the space from internal and external hazards such as feed lines, augers, etc.
- Procedures for communication between entrants and attendants.
- Emergency procedures.
- Equipment that will be required for entry, including personal protective equipment and respiratory protection.
- Any necessary fire/explosion prevention measures such as use of explosion-proof electrical equipment, hot work permits, etc.

Procedures required for type 2 and type 3 spaces will be much simpler than for type 1 spaces. Procedures for entry into type 1 spaces must be much more extensive.

Procedures must be specific to the PRCS and to the hazards or potential hazards associated with the space.

Permit system

The use of a permit system will be required for all entries. A written permit form is used to document that the steps described in the procedure have been taken prior to and during entry, and to document conditions (i.e., air monitoring results).

Much like the requirements for procedures described above, the content of the written permit will be quite extensive for type 1 entries, but much simpler for type 2 and 3 entries. For example, there may only be one or two questions in the permit for type 3 entries.

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In some cases, especially in type 2 and type 3 entries, it may be possible to integrate the written procedure and the permit form into the same document.

Entry attendant

An entry attendant is required for type 1 entries. Although not technically required for type 2 or 3 entries, they are strongly encouraged.

In general, the role of the attendant is to remain outside the PRCS during entry to monitor conditions inside and outside of the space. The attendant maintains communication with all entrants and revokes the entry permit when a prohibited condition is observed. The attendant may also be called upon to initiate any emergency or rescue procedures, including non-entry rescue.

Entry supervisor

An entry supervisor is required for type 1 entries. Although not technically required for type 2 or 3 entries, they are strongly encouraged.

In general, the role of the entry supervisor is to authorize entry after he/she has reviewed the entry procedure and permit form and verified that all necessary steps have been taken prior to entry.

Emergency planning and rescue

Emergency and rescue plans must be developed for type 1 spaces, but are also strongly recommended for all entries.

To facilitate relatively simple non-entry rescues, entrants into type 3 spaces must wear a full-body harness with a lifeline that is attached to a fixed point outside the space. If the entry involves descending more than 5 vertical feet in the space, the lifelines must be attached to some type of mechanical retrieval device such as a tripod and winch. Vehicles may not be used for this purpose.

In more serious scenarios, it may be necessary to enter the space to perform rescue. Plans must be developed for this type of rescue well in advance of the entry. It is never sufficient to assume that local fire departments can and will respond to confined space emergencies. In smaller communities in particular, fire departments often have prolonged response times and may not be equipped, trained, and qualified to provide confined space rescue.

A responder must be designated in the entry rescue plans. In general, there are two options: using in-house staff/employees or designating an external source such as local emergency services or a contractor. In either case, a great deal of planning, communicating, and training will be required.

The OSHA regulation does not specify the amount of training required to prepare an employee to perform entry rescue. However, anything less than several days of training would probably be inadequate.

Regardless of who provides rescue services (in-house staff or external sources), annual rescue drills in which life-size/weight dummies are extracted from actual spaces must be conducted and documented.

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See 29 CFR 1910.146(k) and/or appendix F of 29 CFR 1910.146 for more information on training and qualifying rescuers.

Questions

If you have questions on this topic, please contact the Office of Occupational Health and Safety at (612) 626-5008 or uohs@umn.edu, or see the website at <http://www.ohs.umn.edu>.