

Permit-Required Confined Spaces





Employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

This informational booklet provides a general overview of a particular topic related to OSHA standards. It does not alter or determine compliance responsibilities in OSHA standards or the *Occupational Safety and Health Act of 1970*. Because interpretations and enforcement policy may change over time, you should consult current OSHA administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements.

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This information is available to sensory impaired individuals upon request. Voice phone: (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

Permit-Required Confined Spaces



U.S. Department of Labor

Occupational Safety and Health Administration

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Introduction

Many workplaces contain spaces that are considered to be “confined” because their configurations hinder the activities of employees who must enter into, work in or exit from them. In many instances, employees who work in confined spaces also face increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment and hazardous atmospheric conditions. Confinement itself may pose entrapment hazards and work in confined spaces may keep employees closer to hazards such as machinery components than they would be otherwise. For example, confinement, limited access and restricted airflow can result in hazardous conditions that would not normally arise in an open workplace.

The terms “permit-required confined space” and “permit space” refer to spaces that meet OSHA’s definition of a “confined space” and contain health or safety hazards. For this reason, OSHA requires workers to have a permit to enter these spaces. Throughout this publication, the term “permit space” will be used to describe a “permit-required confined space.”

Definitions

By definition, a **confined space**:

- Is large enough for an employee to enter fully and perform assigned work;
- Is not designed for continuous occupancy by the employee; and
- Has a limited or restricted means of entry or exit.

These spaces may include underground vaults, tanks, storage bins, pits and diked areas, vessels, silos and other similar areas.

By definition, a **permit-required confined space** has one or more of these characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material with the potential to engulf someone who enters the space;
- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a

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

- Contains any other recognized serious safety or health hazards.

OSHA's Confined Space Standard

OSHA's standard for confined spaces (29 CFR 1910.146) contains the requirements for practices and procedures to protect employees in general industry from the hazards of entering permit spaces.

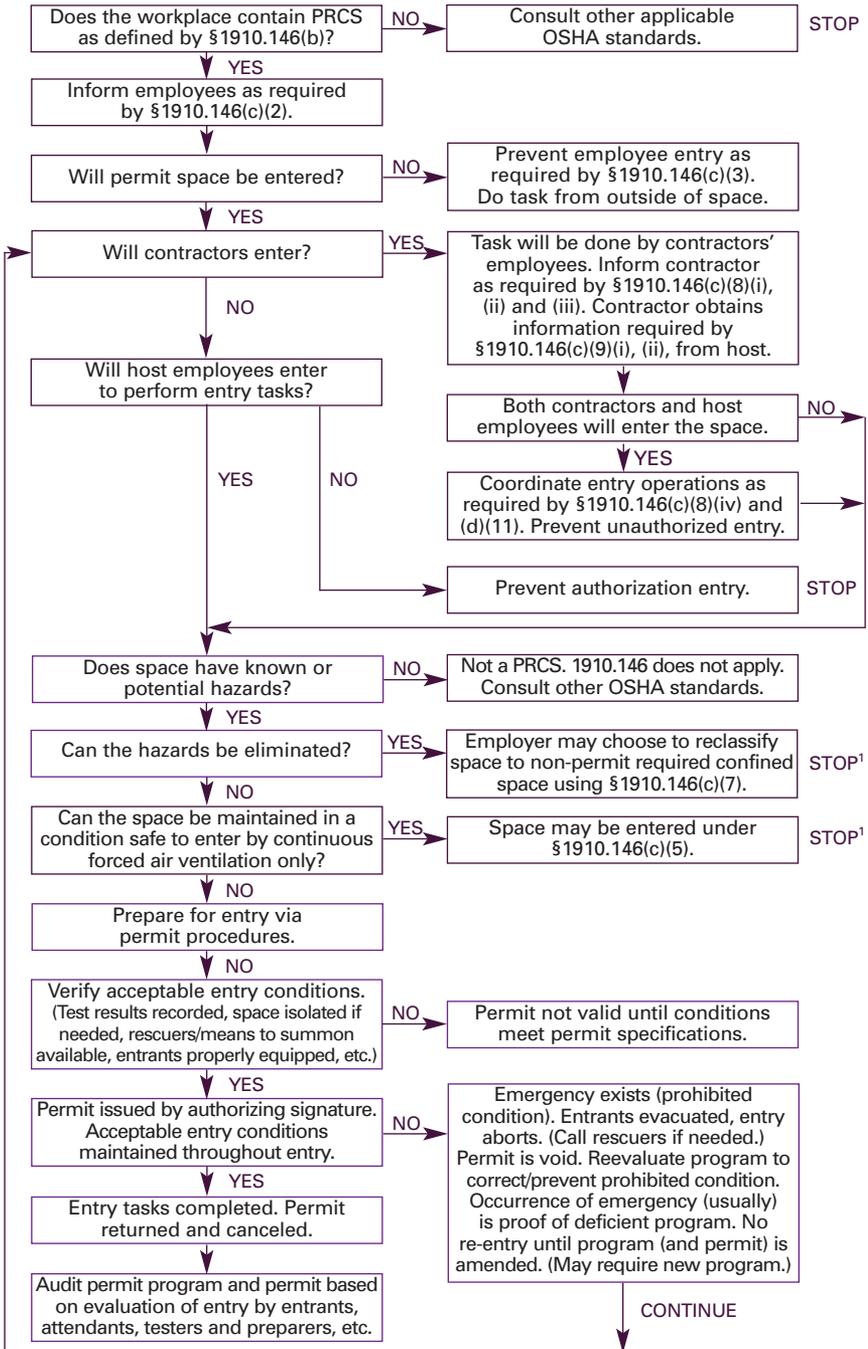
Employers in general industry must evaluate their workplaces to determine if spaces are permit spaces. (See flow chart, page 5.) If a workplace contains permit spaces, the employer must inform exposed employees of their existence, location and the hazards they pose. This can be done by posting danger signs such as "DANGER—PERMIT-REQUIRED CONFINED SPACE—AUTHORIZED ENTRANTS ONLY" or using an equally effective means.

If employees are not to enter and work in permit spaces, employers must take effective measures to prevent them from entering these spaces. If employees are expected to enter permit spaces, the employer must develop a written permit space program and make it available to employees or their representatives.

Alternative to a full permit entry

Under certain conditions described in the standard, the employer may use alternate procedures for worker entry into a permit space. For example, if an employer can demonstrate with monitoring and inspection data that the only hazard is an actual or potential hazardous atmosphere that can be made safe for entry using continuous forced air ventilation, the employer may be exempted from some requirements, such as permits and attendants. However, even in these circumstances, the employer must test the internal atmosphere of the space for oxygen content, flammable gases and vapors, and the potential for toxic air contaminants before any employee enters it. The employer must also provide continuous ventilation and verify that the required measurements are performed before entry.

Permit-Required Confined Space Decision Flow Chart



¹ Spaces may have to be evacuated and reevaluated if hazards arise during entry.

Written Programs

Any employer who allows employee entry into a permit space must develop and implement a written program for the space. Among other things, the OSHA standard requires the employer's written program to:

- Implement necessary measures to prevent unauthorized entry;
- Identify and evaluate permit space hazards before allowing employee entry;
- Test atmospheric conditions in the permit space before entry operations and monitor the space during entry;
- Perform appropriate testing for the following atmospheric hazards in this sequence: oxygen, combustible gases or vapors, and toxic gases or vapors;
- Establish and implement the means, procedures and practices to eliminate or control hazards necessary for safe permit space entry operations;
- Identify employee job duties;
- Provide and maintain, at no cost to the employee, personal protective equipment and any other equipment necessary for safe entry and require employees to use it;
- Ensure that at least one attendant is stationed outside the permit space for the duration of entry operations;
- Coordinate entry operations when employees of more than one employer are working in the permit space;
- Implement appropriate procedures for summoning rescue and emergency services, and preventing unauthorized personnel from attempting rescue;
- Establish, in writing, and implement a system for the preparation, issue, use and cancellation of entry permits;
- Review established entry operations annually and revise the permit space entry program as necessary; and
- Implement the procedures that any attendant who is required to monitor multiple spaces will follow during an emergency in one or more of those spaces.

Controlling Hazards

The employer's written program should establish the means, procedures and practices to eliminate or control hazards necessary for safe permit space entry operations. These may include:

- Specifying acceptable entry conditions;
- Isolating the permit space;
- Providing barriers;
- Verifying acceptable entry conditions; and
- Purging, making inert, flushing or ventilating the permit space.

Equipment for safe entry

In addition to personal protective equipment, other equipment that employees may require for safe entry into a permit space includes:

- Testing, monitoring, ventilating, communications and lighting equipment;
- Barriers and shields;
- Ladders; and
- Retrieval devices.

Detection of hazardous conditions

If hazardous conditions are detected during entry, employees must immediately leave the space. The employer must evaluate the space to determine the cause of the hazardous atmosphere and modify the program as necessary.

When entry to permit spaces is prohibited, the employer must take effective measures to prevent unauthorized entry. Non-permit confined spaces must be evaluated when changes occur in their use or configuration and, where appropriate, must be reclassified as permit spaces.

A space with no potential to have atmospheric hazards may be classified as a non-permit confined space only when all hazards are eliminated in accordance with the standard. If entry is required to eliminate hazards and obtain data, the employer must follow specific procedures in the standard.

Informing Contract Employees

Employers must inform any contractors whom they hire to enter permit spaces about:

- The permit spaces and permit space entry requirements;
- Any identified hazards;
- The employer's experience with the space, such as knowledge of hazardous conditions; and
- Precautions or procedures to be followed when in or near permit spaces.

When employees of more than one employer are conducting entry operations, the affected employers must coordinate entry operations to ensure that affected employees are appropriately protected from permit space hazards. The employer also must give contractors any other pertinent information regarding hazards and operations in permit spaces and be debriefed at the conclusion of entry operations.

Entry Permits

A permit, signed by the entry supervisor, must be posted at all entrances or otherwise made available to entrants before they enter a permit space. The permit must verify that pre-entry preparations outlined in the standard have been completed. The duration of entry permits must not exceed the time required to complete an assignment.

Entry permits must include:

- Name of permit space to be entered, authorized entrant(s), eligible attendants and individuals authorized to be entry supervisors;
- Test results;
- Tester's initials or signature;
- Name and signature of supervisor who authorizes entry;
- Purpose of entry and known space hazards;
- Measures to be taken to isolate permit spaces and to eliminate or control space hazards;

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- Name and telephone numbers of rescue and emergency services and means to be used to contact them;
 - Date and authorized duration of entry;
 - Acceptable entry conditions;
 - Communication procedures and equipment to maintain contact during entry;
 - Additional permits, such as for hot work, that have been issued authorizing work in the permit space;
 - Special equipment and procedures, including personal protective equipment and alarm systems; and
 - Any other information needed to ensure employee safety.

Cancelled entry permits

The entry supervisor must cancel entry permits when an assignment is completed or when new conditions exist. New conditions must be noted on the canceled permit and used in revising the permit space program. The standard requires that the employer keep all canceled entry permits for at least one year.

Worker Training

Before the initial work assignment begins, the employer must provide proper training for all workers who are required to work in permit spaces. After the training, employers must ensure that the employees have acquired the understanding, knowledge and skills necessary to safely perform their duties. Additional training is required when:

- The job duties change;
- A change occurs in the permit space program or the permit space operation presents any new hazard; and
- An employee's job performance shows deficiencies.

In addition to this training, rescue team members also require training in CPR and first aid. Employers must certify that this training has been provided.

After completion of training, the employer must keep a record of employee training and make it available for inspection by employees

and their authorized representatives. The record must include the employee's name, the trainer's signature or initials and dates of the training.

Assigned Duties

Authorized entrant

Authorized entrants are required to:

- Know space hazards, including information on the means of exposure such as inhalation or dermal absorption, signs of symptoms and consequences of the exposure;
- Use appropriate personal protective equipment properly;
- Maintain communication with attendants as necessary to enable them to monitor the entrant's status and alert the entrant to evacuate when necessary;
- Exit from the permit space as soon as possible when:
 - Ordered by the authorized person;
 - He or she recognizes the warning signs or symptoms of exposure;
 - A prohibited condition exists; or
 - An automatic alarm is activated.
- Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

Attendant

The attendant is required to:

- Remain outside the permit space during entry operations unless relieved by another authorized attendant;
- Perform non-entry rescues when specified by the employer's rescue procedure;
- Know existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences and physiological effects;

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- Maintain communication with and keep an accurate account of those workers entering the permit space;
 - Order evacuation of the permit space when:
 - A prohibited condition exists;
 - A worker shows signs of physiological effects of hazard exposure;
 - An emergency outside the confined space exists; and
 - The attendant cannot effectively and safely perform required duties.
 - Summon rescue and other services during an emergency;
 - Ensure that unauthorized people stay away from permit spaces or exit immediately if they have entered the permit space;
 - Inform authorized entrants and the entry supervisor if any unauthorized person enters the permit space; and
 - Perform no other duties that interfere with the attendant's primary duties.

Entry supervisor

Entry supervisors are required to:

- Know space hazards including information on the mode of exposure, signs or symptoms and consequences;
- Verify emergency plans and specified entry conditions such as permits, tests, procedures and equipment before allowing entry;
- Terminate entry and cancel permits when entry operations are completed or if a new condition exists;
- Verify that rescue services are available and that the means for summoning them are operable;
- Take appropriate measures to remove unauthorized entrants; and
- Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.

Emergencies

Rescue service personnel

The standard requires employers to ensure that responders are capable of responding to an emergency in a timely manner. Employers must provide rescue service personnel with personal protective and rescue equipment, including respirators, and training in how to use it. Rescue service personnel also must receive the authorized entrants training and be trained to perform assigned rescue duties.

The standard also requires that all rescuers be trained in first aid and CPR. At a minimum, one rescue team member must be currently certified in first aid and CPR. Employers must ensure that practice rescue exercises are performed yearly and that rescue services are provided access to permit spaces so they can practice rescue operations. Rescuers also must be informed of the hazards of the permit space.

Harnesses and retrieval lines

Authorized entrants who enter a permit space must wear a chest or full body harness with a retrieval line attached to the center of their backs near shoulder level or above their heads. Wristlets may be used if the employer can demonstrate that the use of a chest or full body harness is not feasible or creates a greater hazard.

Also, the employer must ensure that the other end of the retrieval line is attached to a mechanical device or a fixed point outside the permit space. A mechanical device must be available to retrieve someone from vertical type permit spaces more than five feet (1.524 meters) deep.

MSDS

If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or other written information must be made available to the medical facility personnel treating the exposed entrant.

OSHA Assistance

OSHA can provide extensive help through a variety of programs, including technical assistance about effective safety and health programs, state plans, workplace consultations, voluntary protection programs, strategic partnerships, training and education, and more. An overall commitment to workplace safety and health can add value to your business, to your workplace, and to your life.

Safety and Health Program Management Guidelines

Effective management of employee safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. In fact, an effective safety and health program forms the basis of good employee protection and can save time and money and increase productivity and reduce employee injuries, illnesses, and related workers' compensation costs.

To assist employers and employees in developing effective safety and health programs, OSHA published recommended Safety and Health Program Management Guidelines (54 Federal Register (16): 3904-3916, January 26, 1989). These voluntary guidelines can be applied to all places of employment covered by OSHA.

The guidelines identify four general elements critical to the development of a successful safety and health management system:

- Management leadership and employee involvement,
- Worksite analysis,
- Hazard prevention and control, and
- Safety and health training.

The guidelines recommend specific actions, under each of these general elements, to achieve an effective safety and health program. The *Federal Register* notice is available online at www.osha.gov.

State Programs

The *Occupational Safety and Health Act of 1970* (OSH Act) encourages states to develop and operate their own job safety and health plans. OSHA approves and monitors these plans. Twenty-four states, Puerto Rico and the Virgin Islands currently operate approved state plans: 22 cover both private and public (state and local government) employment; Connecticut, New Jersey, New York and the Virgin Islands cover the public sector only. States and territories with their own OSHA-approved occupational safety and health plans must adopt standards identical to, or at least as effective as, the Federal OSHA standards.

Consultation Services

Consultation assistance is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state governments employing professional safety and health consultants. Comprehensive assistance includes an appraisal of all mechanical systems, work practices, and occupational safety and health hazards of the workplace and all aspects of the employer's present job safety and health program. In addition, the service offers assistance to employers in developing and implementing an effective safety and health program. No penalties are proposed or citations issued for hazards identified by the consultant. OSHA provides consultation assistance to the employer with the assurance that his or her name and firm and any information about the workplace will not be routinely reported to OSHA enforcement staff.

Under the consultation program, certain exemplary employers may request participation in OSHA's Safety and Health Achievement Recognition Program (SHARP). Eligibility for participation in SHARP includes receiving a comprehensive consultation visit, demonstrating exemplary achievements in workplace safety and health by abating all identified hazards, and developing an excellent safety and health program.

Employers accepted into SHARP may receive an exemption from programmed inspections (not complaint or accident investigation inspections) for a period of 1 year. For more information concerning consultation assistance, see OSHA's website at www.osha.gov.

Voluntary Protection Programs (VPP)

Voluntary Protection Programs and on-site consultation services, when coupled with an effective enforcement program, expand employee protection to help meet the goals of the OSH Act. The VPPs motivate others to achieve excellent safety and health results in the same outstanding way as they establish a cooperative relationship between employers, employees, and OSHA.

For additional information on VPP and how to apply, contact the OSHA regional offices listed at the end of this publication.

Strategic Partnership Program

OSHA's Strategic Partnership Program, the newest member of OSHA's cooperative programs, helps encourage, assist, and recognize the efforts of partners to eliminate serious workplace hazards and achieve a high level of employee safety and health. Whereas OSHA's Consultation Program and VPP entail one-on-one relationships between OSHA and individual worksites, most strategic partnerships seek to have a broader impact by building cooperative relationships with groups of employers and employees. These partnerships are voluntary, cooperative relationships between OSHA, employers, employee representatives, and others (e.g., trade unions, trade and professional associations, universities, and other government agencies).

For more information on this and other cooperative programs, contact your nearest OSHA office, or visit OSHA's website at www.osha.gov.

Alliance Program

Through the Alliance Program, OSHA works with groups committed to safety and health, including businesses, trade or professional organizations, unions and educational institutions, to leverage resources and expertise to develop compliance assistance tools and resources and share information with employers and employees to help prevent injuries, illnesses and fatalities in the workplace.

Alliance Program agreements have been established with a wide variety of industries including meat, apparel, poultry, steel, plastics, maritime, printing, chemical, construction, paper and telecommunications. These agreements are addressing many safety and health hazards and at-risk audiences; including silica, fall protection, amputations, immigrant workers, youth and small businesses. By meeting the goals of the Alliance Program agreements (training and education, outreach and communication, and promoting the national dialogue on workplace safety and health), OSHA and the Alliance Program participants are developing and disseminating compliance assistance information and resources for employers and employees such as electronic assistance tools, fact sheets, toolbox talks, and training programs.

OSHA Training and Education

OSHA area offices offer a variety of information services, such as compliance assistance, technical advice, publications, audiovisual aids and speakers for special engagements. OSHA's Training Institute in Arlington Heights, IL, provides basic and advanced courses in safety and health for Federal and state compliance officers, state consultants, Federal agency personnel, and private sector employers, employees, and their representatives.

The OSHA Training Institute also has established OSHA Training Institute Education Centers to address the increased demand for its courses from the private sector and from other federal agencies. These centers are nonprofit colleges, universities, and other organizations that have been selected after a competition for participation in the program.

OSHA also provides funds to nonprofit organizations, through grants, to conduct workplace training and education in subjects where OSHA believes there is a lack of workplace training. Grants are awarded annually. Grant recipients are expected to contribute 20 percent of the total grant cost.

For more information on grants, training, and education, contact the OSHA Training Institute, Directorate of Training and Education, 2020 South Arlington Road, Arlington Heights, IL 60005, (847) 297-4810, or see *Outreach* on OSHA's website at www.osha.gov. For further information on any OSHA program, contact your nearest OSHA regional office listed at the end of this publication.

Information Available Electronically

OSHA has a variety of materials and tools available on its website at www.osha.gov. These include electronic compliance assistance tools, such as Safety and Health Topics, eTools, Expert Advisors; regulations, directives and publications; videos and other information for employers and employees. OSHA's software programs and compliance assistance tools walk you through challenging safety and health issues and common problems to find the best solutions for your workplace.

A wide variety of OSHA materials, including standards, interpretations, directives and more can be purchased on CD-ROM from the U.S. Government Printing Office, Superintendent of Documents, toll-free phone (866) 512-1800.

OSHA Publications

OSHA has an extensive publications program. For a listing of free or sales items, visit OSHA's website at www.osha.gov or contact the OSHA Publications Office, U.S. Department of Labor, 200 Constitution Avenue, NW, N-3101, Washington, DC 20210: Telephone (202) 693-1888 or fax to (202) 693-2498.

Contacting OSHA

To report an emergency, file a complaint, or seek OSHA advice, assistance, or products, call (800) 321-OSHA or contact your nearest OSHA Regional or Area office listed at the end of this publication. The teletypewriter (TTY) number is (877) 889-5627.

Written correspondence can be mailed to the nearest OSHA Regional or Area Office listed at the end of this publication or to OSHA's national office at: U.S. Department of Labor, Occupational Safety and Health Administration, 200 Constitution Avenue, N.W., Washington, DC 20210.

By visiting OSHA's website at www.osha.gov, you can also:

- file a complaint online,
- submit general inquiries about workplace safety and health electronically, and
- find more information about OSHA and occupational safety and health.

OSHA Regional Offices

Region I

(CT,* ME, MA, NH, RI, VT*)
JFK Federal Building, Room E340
Boston, MA 02203
(617) 565-9860

Region II

(NJ,* NY,* PR,* VI*)
201 Varick Street, Room 670
New York, NY 10014
(212) 337-2378

Region III

(DE, DC, MD,* PA, VA,* WV)
The Curtis Center
170 S. Independence Mall West
Suite 740 West
Philadelphia, PA 19106-3309
(215) 861-4900

Region IV

(AL, FL, GA, KY,* MS, NC,* SC,* TN*)
61 Forsyth Street, SW, Room 6T50
Atlanta, GA 30303
(404) 562-2300

Region V

(IL, IN,* MI,* MN,* OH, WI)
230 South Dearborn Street
Room 3244
Chicago, IL 60604
(312) 353-2220

Region VI

(AR, LA, NM,* OK, TX)
525 Griffin Street, Room 602
Dallas, TX 75202
(972) 850-4145

Region VII

(IA,* KS, MO, NE)
Two Pershing Square
2300 Main Street, Suite 1010
Kansas City, MO 64108-2416
(816) 283-8745

Region VIII

(CO, MT, ND, SD, UT,* WY*)
1999 Broadway, Suite 1690
PO Box 46550
Denver, CO 80202-5716
(720) 264-6550

Region IX

(AZ,* CA,* HI,* NV,* and
American Samoa, Guam and
the Northern Mariana Islands)
90 7th Street, Suite 18-100
San Francisco, CA 94103
(415) 625-2547

Region X

(AK,* ID, OR,* WA*)
1111 Third Avenue, Suite 715
Seattle, WA 98101-3212
(206) 553-5930

* These states and territories operate their own OSHA-approved job safety and health programs and cover state and local government employees as well as private sector employees. The Connecticut, New Jersey, New York and Virgin Islands plans cover public employees only. States with approved programs must have standards that are identical to, or at least as effective as, the Federal OSHA standards.

Note: To get contact information for OSHA Area Offices, OSHA-approved State Plans and OSHA Consultation Projects, please visit us online at www.osha.gov or call us at 1-800-321-OSHA.





**Occupational Safety
and Health Administration**

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Is 911 your Confined Space Rescue Plan?

Permit-required confined spaces can present conditions that are immediately dangerous to workers' lives or health if not properly identified, evaluated, tested and controlled.

OSHA has developed a standard for Confined Spaces in Construction ([29 CFR 1926 Subpart AA](#)) for any space that meets all of the following criteria:

- Is large enough for a worker to enter;
- Has limited means of entry or exit; and
- Is not designed for continuous occupancy.

One provision of the standard requires employers to develop and implement procedures for summoning rescue or emergency services in permit-required confined spaces. An employer who relies on local emergency services for assistance is required to meet the requirements of [§1926.1211 — Rescue and emergency services](#).

OSHA recognizes that not all rescue services or emergency responders are trained and equipped to conduct confined space rescues. When employers identify an off-site rescue service, it is critical that the rescuers can protect their employees. The emergency services should be familiar with the exact site location, types of permit-required confined spaces and the necessary rescue equipment.

For Employers

Calling emergency responders to provide rescue services can be a suitable way of providing for rescues in a permit-required confined space. Pre-planning will ensure that the emergency service is capable, available and prepared.

Prior to the start of the rescue work operation, employers must evaluate prospective emergency responders and select one that has:

- Adequate equipment for rescues, such as: atmospheric monitors, fall protection, extraction equipment, and self-contained breathing apparatus (SCBA) for the particular permit-required confined spaces.



Photo: Oregon OSHA

Emergency service workers perform a practice rescue inside a manhole.

- The ability to respond and conduct a rescue in a timely manner based on the site conditions and is capable of conducting a rescue if faced with potential hazards specific to the space. Such hazards may include:
 - Atmospheric hazards (e.g., flammable vapors, low oxygen)
 - Electrocutation (e.g., unprotected, energized wires)
 - Flooding or engulfment potential
 - Poor lighting
 - Fall hazards
 - Chemical hazards
- Agreed to notify the employer in the event that the rescue team becomes unavailable.

Employers must also:

- Inform the emergency responders of potential hazards when they are called to perform a rescue at the worksite; and

- Provide emergency responders with access to all permit-required confined spaces. Such access may include:
 - Information on access routes, gates or landmarks
 - A project site plan if necessary
 - GPS coordinates if in a remote location

Additionally, employers should ensure that:

- The most efficient means to contact emergency responders is available;
- Any changes to the project site conditions are communicated to the rescue service; and
- Emergency responders are willing to visit the site and conduct a joint training exercise with the employer.

For Emergency Service Providers

Permit-required confined space emergencies can threaten workers' safety and health. Talking with the employer about the hazards they might encounter will assist in preparing for the situation. The following are some questions responders should be able to answer when an employer requests their services:

- Are you able to respond and conduct a rescue in a timely manner based on the site conditions?
- Do you have the appropriate equipment for response and rescue, such as: atmospheric monitors, fall protection, extraction equipment, and self-contained breathing apparatus (SCBA) for the particular permit-required confined spaces?
- Are you prepared for the hazards the employer has identified?
 - Atmospheric hazards (e.g., flammable vapors, low oxygen)
 - Electrocution (e.g., unprotected, energized wires)
 - Flooding or engulfment potential
 - Poor lighting
 - Fall hazards
 - Chemical hazards

- Are you trained for the hazards identified by the employer?
 - Hazard Communication training (HAZCOM)
 - Respiratory Protection training
 - Hazardous Material training
 - HAZWOPER training
 - Hazard recognition
 - Can you cope with other hazards the company may have identified on the site?
 - Do you need to develop a new procedure for these hazards/conditions?
- Has the employer provided you with the **exact** location of the work site?
 - Information on access routes, gates or landmarks
 - A project site plan if necessary
 - GPS coordinates if in a remote location
- Can you visit the site and hold a practice rescue?
- Does the company know the best way to contact you?
- How would the company communicate any changes to site conditions throughout the project?
- Could other emergencies or group training preclude you from responding and how will that be communicated?

OSHA encourages all emergency service providers to work closely with employers who request their services for permit-required confined space rescues. Pre-rescue planning, communication, and effective coordination of rescue activities are critical in the event that a life-threatening incident should occur.

Private sector commercial emergency service providers are covered by Federal OSHA and must comply with the provisions of [§1926.1211](#). Similarly, state and local government emergency service providers in a state with an OSHA approved state plan must comply with these requirements. See www.osha.gov/dcsp/osp for information on state-plan requirements.

For more information on confined spaces in construction, visit OSHA's website at: www.osha.gov/confinedspaces.

Workers' Rights

Workers have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language and vocabulary the worker understands) about workplace hazards, methods to prevent them, and the OSHA standards that apply to their workplace.
- Review records of work-related injuries and illnesses.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA's rules. OSHA will keep all identities confidential.

- Exercise their rights under the law without retaliation, including reporting an injury or raising health and safety concerns with their employer or OSHA. If a worker has been retaliated against for using their rights, they must file a complaint with OSHA as soon as possible, but no later than 30 days.

For more information, see [OSHA's Workers page](#).

How to Contact OSHA

For questions or to get information or advice, to report an emergency, fatality, inpatient hospitalization, amputation, or loss of an eye, or to file a confidential complaint, contact your nearest OSHA office, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For assistance, contact us. We can help. It's confidential.



www.osha.gov (800) 321-OSHA (6742)



U.S. Department of Labor

Confined Spaces in Residential Construction

OSHA has developed a standard for **Confined Spaces in Construction (29 CFR 1926 Subpart AA)** that applies to spaces such as attics, basements, and crawl spaces. This Fact Sheet, developed after consultation with the National Association of Home Builders (NAHB), and a detailed **Frequently Asked Questions (FAQs)** document, clarify some of the standard's provisions and their application to residential construction work.

OSHA has developed a construction standard for Confined Spaces ([29 CFR 1926 Subpart AA](#)) — that applies to any space that meets the following three criteria:

- Is large enough for a worker to enter it;
- Has limited or restricted means of entry or exit; and
- Is not designed for continuous occupancy.

A confined space that contains certain hazardous conditions may be considered a **permit-required** confined space under the standard. **Permit-required** confined spaces can be immediately dangerous to workers' lives if not properly identified, evaluated, tested and controlled. A **permit-required** confined space means a confined space that has 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 which slopes downward and tapers to a smaller cross-section;
- Contains any other recognized serious safety or health hazard.

How Employers Can Determine if Confined Spaces or Permit-required Confined Spaces Exist

Before beginning work on a residential homebuilding project, each employer must ensure that a competent person identifies all confined spaces in which one or more employees it directs may work, and identifies

each space that is a permit-required confined space. The competent person does not have to physically examine each attic, basement or crawl space, provided that the competent person can reliably determine whether the spaces with the same or similar configuration contain a hazard or potential hazard that would require the permit-space classification. The initial evaluation may be done using existing experience and knowledge of the space by the competent person and does not need to be documented. For example, a competent person responsible for inspecting new homes being built to identical specifications with the same materials need not physically inspect each attic separately to determine if it is a permit-required confined space.

How Common Spaces in Residential Construction are Impacted by the Standard

Spaces in a residential home may be considered confined spaces or permit-required confined spaces during the construction or remodeling process. However, the vast majority of the standard's requirements only apply to **permit-required** confined spaces, and attics, basements, and crawl spaces in a residential home — three common spaces — will not typically trigger these requirements.

Attics: In many instances, an attic will not be considered a confined space because there is not limited or restricted means for entry and exit. For example, an attic that can be accessed via pull down stairs that resemble the structure of a stationary stairway and do not require an employee to ascend /descend hand-over-hand would not be considered a confined space if there are no impediments to egress.

Attics that are determined to be confined spaces would generally not be **permit-required** confined spaces because they typically do not contain the types of hazards or potential hazards that make a confined space a permit-required confined space (those that could impair an entrant’s ability to exist the space without assistance).

However, extreme heat in an attic can be considered a serious physical hazard such that the attic could be considered permit-required confined space. OSHA has not quantified how hot it must be to trigger the permit-required confined spaces requirements. However, heat that is extreme enough to cause heat exhaustion (e.g., dizziness, headaches, severe sweating, cramps) may impede an entrant’s ability to exit the attic without assistance and would make a confined space permit-required.

Basements: Basements in a residential home that are designed for continuous occupancy by a homeowner are not considered confined spaces under the standard, provided the basement is configured as designed (e.g., has permanent stairs, a walk-out entry/exit, or an egress window installed).

Crawl Spaces: Crawl spaces in a residential home will not typically trigger the majority of the requirements of the standard unless they contain a physical hazard such as an exposed active electric wire.

For Employers

Regardless of the area, the competent person needs to pay particular attention to acute health hazards that may be present when assessing confined spaces, such as toxic (carbon monoxide), flammable, or explosive atmospheres. Safety Data Sheets (SDSs) must be maintained and reviewed to fully assess potential hazards prior to worker entry into a confined space to determine whether it is a permit-required space.

Employers’ obligations under the standard will depend, in part, on what “type” of employer they are. However, most of the obligations in the standard apply to **entry** employers.

Host employer: The employer who owns or manages the property where the construction work is taking place.

Controlling contractor: The employer who has overall responsibility for construction at the worksite (note that if the controlling contractor

owns or manages the property, then it is both a controlling employer and a host employer).

Entry employer (Sub Contractor): Any employer who decides that an employee it directs will enter a **permit-required** confined space.

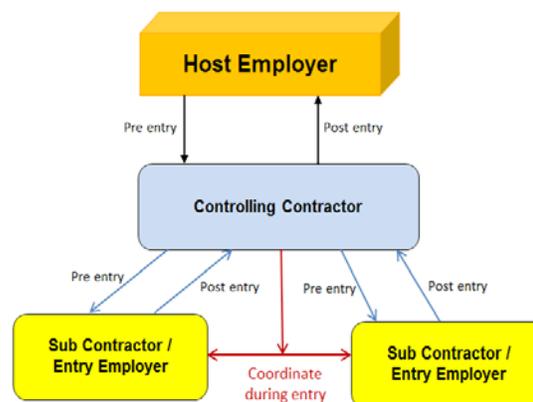
The standard makes the controlling contractor the primary point of contact for information about permit-required confined spaces at the work site. The controlling contractor passes information it has about permit-required confined spaces at the work site on to the employers whose workers will enter the spaces (entry employers).

Likewise, entry employers must give the controlling contractor information about their entry program and hazards they encounter in the space, and the controlling contractor passes that information on to other entry employers. The controlling contractor is also responsible for making sure that employers outside a space know not to create hazards in the space, and that workers from different entry employers working in a space at the same time do not create hazards for each other.

Host/Controlling Employer Obligations

Before entry operations begin, a host employer with the following information must provide it to the controlling contractor:

- Location of each known permit-required confined space;
- Hazards or potential hazards in each space or the reason it is a permit-required confined space; and
- Any precautions that the host employer or any previous controlling contractor/entry employer implemented for the protection of workers in the permit-required confined space.



Note: The above diagram shows the information flow and coordination between these employers

The multi-employer communication requirements only apply to host employers with employees who work at the worksite, regardless of when those workers are at the site and only apply to **permit-required** confined spaces. In addition, beyond this duties discussed above, host employers and controlling contractors are not responsible for compliance with the **permit-required** confined space program provisions of the standard if they have no reason to anticipate that the employees they direct will enter a permit-required confined space.

Entry Employer Obligations

Inform employees: If a workplace contains a permit-required confined space, the entry employer must inform workers in the vicinity of each space of the location and danger posed by that space. This can be done by posting and positioning warning signs at each possible point of entry, or by other equally effective means. The employer must also either take steps to prevent its employees from entering that space or ensure that entry only occurs through a permit program or as otherwise allowed by the standard (alternative entry procedures).

Personal Protective Equipment: Entry employers allowing an employee to enter a permit space must attempt to eliminate or isolate the hazards in the space. When engineering and work-practice controls do not adequately protect employees, they must assess the space to determine what personal protective equipment (PPE) is needed to protect workers. Entry employers must provide workers with the required PPE and proper training on its use and about any related hazards before the work starts.

Training: The standard requires employers to ensure that their workers know about the existence and location of, and dangers posed by, each permit-required confined space, and that they may not enter such spaces without authorization. Entry employers must train workers involved in permit-required confined space operations so that they can perform their duties safely and understand the hazards in permit spaces and the methods used to isolate, control or protect workers. Workers not authorized to perform entry rescues must be trained on the dangers of attempting such rescues.

Written permit-required confined space entry program: The permit-required confined space program must establish a system for preparing, using, and canceling entry permits, which are written or printed documents that allow and control entry into permit spaces.

Rescue: Entry employers must ensure that properly trained rescue and emergency services are available before entry into permit-required confined spaces. For a full discussion of an entry employer's obligations to provide rescue, see OSHA's Fact Sheet entitled: [Is 911 your Confined Space Rescue Plan?](#)

Resources

For additional information see OSHA's Confined Spaces in Construction webpage at www.osha.gov/confinedspaces.

How to Contact OSHA

For questions or to get information or advice, to find out how to contact OSHA's free on-site consultation program, order publications, report a fatality or severe injury, or to file a confidential complaint, visit www.osha.gov or call 1-800-321-OSHA (6742).

This fact sheet was developed by OSHA after consultation with NAHB. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: 1-877-889-5627.

For assistance, contact us. We can help. It's confidential.



www.osha.gov (800) 321-OSHA (6742)



U.S. Department of Labor

OSHA FactSheet

Procedures for Atmospheric Testing in Confined Spaces¹

Atmospheric testing is required for two distinct purposes: evaluation of the hazards of the permit space and verification that acceptable conditions exist for entry into that space.

A confined space is one that is large enough to enter and perform assigned work in; it has limited or restricted ways to enter or exit the space; and it was not designed to be occupied continuously by a worker.

Evaluation testing

The atmosphere within a confined space must be tested using equipment that is designed to detect the chemicals that may be present at levels that are well below the defined exposure limits. Evaluation testing is done to:

- determine what chemical hazards are or may become present in the space's atmosphere, and
- identify what steps must be followed and what conditions must be met to ensure that atmospheric conditions are safe for a worker to enter the space.

The testing results and the decisions about what steps must be followed before entry must be evaluated by, or reviewed by, a technically qualified professional like an OSHA consultation service, a certified industrial hygienist, a registered safety engineer, or a certified safety professional. The technically qualified professional must consider all of the serious hazards in his/her evaluation or review.

A permit space is a confined space that has one or more of the following features: it has or may contain a hazardous atmosphere; it contains a material that can engulf a person who enters; it has an inside design that could trap or asphyxiate a person who

enters (inwardly converging walls, or a floor that slopes downward to a smaller section); or it has any other serious safety or health hazards.

Verification Testing

Before a permit space that may have a hazardous atmosphere can be entered, the atmosphere must be tested using the steps identified on the permit (developed during evaluation testing). Verification testing is done to make sure that the chemical hazards that may be present are below the levels necessary for safe entry, and that they meet the conditions identified on the permit. Test the atmosphere in the following order: (1) for oxygen, (2) for combustible gases, and then (3) for toxic gases and vapors.² The testing results -- the actual test concentrations -- must be recorded on the permit near the levels identified for safe entry.

Duration of Testing

For each test required on the permit, you must allow enough time for the air from the space to be drawn into the equipment and for the sensor (or other detection device) to react to the chemical if it is present. This is considered the "minimum response time" and it will be noted by the manufacturer in the operator's manual. Be aware that you will need to add time to this "minimum response time" if you have attached hosing or a probe extension to the inlet. The additional time is needed to allow the air from the different depths of the space to be pulled into the equipment inlet.

Testing Conditions in Spaces that May Have Layered Atmospheres

For permit spaces that are deep or have areas leading away from the entry point, the atmosphere may be layered or may be different in remote areas. For these spaces, testing must be done in the area surrounding the worker, which is considered four (4) feet in the direction of travel and to each side. If a sample probe is used to do the testing,

then the worker must move slowly enough so that testing is completed, keeping the equipment "response time" in mind, before he/she moves into the new area.

Retesting the Space During Entry or Before Re-Entry

Test the permit space routinely to make sure that the atmospheric conditions continue to be safe for entry.³

¹ Title 29 Code of Federal Regulations 1910.146, Appendix B.

² 29 CFR 1910.146(c)(5)(ii)(C) and (d)(5)(iii).

³ 29 CFR 1910.146(c)(5)(ii)(F) and (d)(5)(ii).

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For more complete information:



U.S. Department of Labor

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