

Confined Space Entry for Supervisors

Risk Control from Liberty Mutual Insurance



Highlights:

- Many confined space incidents result in multiple fatalities
- Never make an unauthorized CSE for any reason
- Definitions of a confined space
- Hazards
- SCE permit system
- Supervisor responsibilities
- Atmospheric testing

People safely enter and work in confined spaces every day. Unfortunately, a small percentage of confined space entries result in fatal accidents. Even more alarming is that many confined space incidents result in multiple fatalities!

The dangers that lurk in confined spaces are numerous and may be undetectable without adequate planning and proper testing equipment. Conditions such as poor ventilation, which might only be a minor concern in a normal work environment, can be fatal in a confined space.

Before anyone enters a confined space, all actual or potential hazards must be identified and all necessary safeguards must be in place. An effective site-specific Confined Space Entry (CSE) program can help identify hazards and lead to eliminating or controlling those hazards while working in and around a confined space.

Definitions

Confined Space

Any space that:

- Is large enough and configured in such a way that anyone can bodily enter,
- Has limited or restricted means for entry or exit, and
- Is not designed for human occupancy.

Permit-Required Confined Space

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 that could trap or asphyxiate an entrant (e.g., converging walls or sloping floor)
- Contains any other actual or potential hazard

Confined Space Entry (CSE)

When any part of a person's body breaks the plane of the space's opening, this is considered entry into the confined space.

Confined Space Hazards

The majority of confined space fatalities are caused by air contaminants that have poor warning properties and may not be easily sensed. They can be invisible, odorless, and cause no irritation to the entrant. To make matters worse, many of these contaminants first affect people by impairing their judgment so that they do not realize they are in danger.

Serious injuries and fatalities can also occur when equipment is accidentally started up or when liquids, gases, or other stored energy sources are released into the confined space during work activities. Energy sources can take many forms such as electrical, pneumatic, hydraulic, mechanical, fluid, steam, chemical, or gas, among others. All potential energy sources must be identified, shut off, and properly locked and tagged out before a CSE takes place.

Other injury hazards can arise from employees climbing into or out of confined spaces, working on scaffolds and at heights, using power tools, welding, or applying chemicals.

Always plan for and use appropriate personal protective equipment, fall prevention or fall arresting systems, ladders, scaffolds with railings, material handling devices, and/or other safeguards, as needed.

Studies of confined space accidents have revealed some alarming statistics. 89 percent of fatalities involved workers who had been authorized by their supervisors to enter the confined space, and 37 percent of fatalities involved employees with supervisory responsibilities. At least 60 percent of workers who died in a confined space accident had entered in an attempt to rescue a fallen coworker. No one should ever make an unauthorized confined space entry for any purpose. Instead, everyone involved should know how to summon rescue services, as outlined in the site-specific CSE program, and direct the authorized rescuers to the confined space site.

Confined Space Variability

Confined spaces vary widely both in their physical characteristics and in the reasons for which they are entered. Since the type and magnitude of the hazards posed to entrants varies from space to space, it is essential that individual differences be thoroughly evaluated to assure that the unique hazard posed by each space is adequately controlled.

CSE Permit System

All supervisors must understand the company CSE program, including:

- CSE permit system
- Responsibilities on the CSE team as entry supervisors, attendants, or area supervisors
- Atmospheric testing, both prior to and during entry, to evaluate conditions within the confined space

According to OSHA Standard 29 CFR1910.146, Permit-Required Confined Spaces for General Industry, entry into a permit-required confined space cannot take place until an entry permit has been completed and signed by an authorized entry supervisor. The entry permit reminds workers of the activities that must take place prior to, during, and after the CSE to ensure the safety of all those involved.

It is important to realize that conditions within a confined space are subject to change. If a hazardous condition is introduced accidentally or intentionally into or around a non-permit space, that space then becomes a permit-required confined space and must be treated as such. Thus, even for non-permit CSEs, the necessary means for workers to exit the space immediately and implement permit-required CSE procedures must be provided.

The CSE permit must identify the following:

1. The permit-required space to be entered
2. Purpose of the entry
3. Date and authorized duration of the permit
4. Names of authorized entrants
5. Names of current attendants
6. Name of current entry supervisor
7. Hazards of the space
8. Measures used to isolate the space and eliminate or control hazards before entry
9. Acceptable entry conditions
10. Results of initial and periodic tests, names of testers, and times that tests were performed
11. Rescue and emergency services and the means for summoning them

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12. Communication procedures for authorized entrants and attendants during entry
 13. Equipment to be provided (e.g., personal protective equipment, testing apparatus, ventilation equipment, communications and alarm systems, warning devices, rescue equipment)
 14. Any other information necessary to ensure worker safety, given the circumstances of the space
 15. Any additional permits, such as for hot work, that have been issued to authorize entry in the space

Responsibilities

An employer must provide for the training of employees directly involved in CSEs, including entry supervisors, entrants, attendants, and workers in the area of a confined space. In addition, the employer should assign a supervisor to act as the liaison with any outside contractors performing permit-required confined space work on the premises. This critical interaction is to ensure that the contractor follows an adequate CSE program and proper procedures are in place. Everyone must clearly understand that they should never make an unauthorized entry into a confined space, for any reason, especially to perform rescue.

Entry Supervisors

As an entry supervisor, you are responsible for the safety of all workers in and around the confined space, as well as the implementation of the permit system. The entry supervisor determines whether acceptable entry conditions are present in a permit-required confined space, authorizes the entry, oversees entry operations and terminates entry as required. Typical candidates for assignment as entry supervisors are the employer, foreperson, area supervisor, or crew chief. No one is authorized to enter a permit-required confined space until the entry supervisor has signed an entry permit. It is crucial that the entry supervisor be able to identify and differentiate between all potential or actual hazards. If there is any question, the entry supervisor must seek help from a qualified professional before authorizing the CSE. Determining CSE hazards are a matter of life and death.

Entry supervisor's duties include the following:

- Knowing the potential and actual hazards for each CSE, including the mode, symptoms, and consequences of exposure
- Checking entry permits to verify that the appropriate information is provided, that all specified tests have been conducted, and that all specified procedures and equipment are in place
- Enforcing proper work practices during the entry
- Terminating the entry and canceling the permit when operations specified by the entry permit are completed or if a condition not allowed under the entry permit arises in or near the permit space
- Verifying that rescue services are available and that the means for summoning them are operable
- Prohibiting unauthorized individuals from entering or remaining in a permit space
- Determining that entry operations and conditions remain consistent with terms of the entry permit

Area Supervisors

Area supervisors need to be aware of confined spaces in their area and must take precautions to keep unauthorized personnel away from the spaces. They are responsible for ensuring that workers in the area know the location of all confined spaces, the hazards associated with them and the conditions under which they will

be entered. When a CSE is underway, area supervisors must be sure that no other operations that could create hazards for the entrants are conducted in the area. When a CSE is taking place, workers in the area need to be aware that an entry is underway and know what to do if an emergency rescue becomes necessary.

Atmospheric Testing

Unfavorable conditions and inadequate ventilation in a confined space can result in a life-threatening atmosphere. Before anyone enters a confined space, be sure the internal atmosphere is tested for the following conditions, in the order listed, by using a properly calibrated (according to manufacturer recommendations) direct-reading instrument:

1. Oxygen content
2. Flammable gases and vapors
3. Potential toxic air contaminants

If no hazardous atmospheric conditions exist within the space, authorized entrants may enter. During an authorized CSE, the space should be retested periodically to be sure a hazardous atmosphere has not accumulated. If any of the periodic tests reveal a hazardous atmosphere, all entrants must leave the space immediately and the space must be reevaluated to determine how the hazardous atmosphere developed. Prior to anyone re-entering a confined space with recognized or potential atmospheric hazards, follow all steps outlined in the permit section of the site-specific CSE program.

A comprehensive CSE program that incorporates an effective permit system, supervisor awareness, thorough employee training, atmospheric testing and safe work practices will go a long way toward reducing and/or controlling the inherent dangers of CSEs. These elements, combined with strict enforcement and effective communication between all parties involved, will maximize the safety of everyone.

As a supervisor responsible for confined space entry, remember the following:

- Identify the confined space
- Identify all actual or potential hazards
- Shut off, lockout/tagout all energy sources and mechanical hazards
- Ventilate the space
- Test the atmosphere
- Enter only when safe to do so
- Continue to test the atmosphere
- Exit when conditions become unsafe
- Do not allow rescue except by an authorized rescue team

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Confined space entry for employees

Risk Control services

from Liberty Mutual Insurance



It is crucial to understand the dangers lurking in confined spaces. Despite the fact that hundreds of people safely enter and work in confined spaces every day, a small percentage of confined space entries (CSEs) go wrong – dead wrong.

One analysis of confined space fatalities found that many occurred in spaces that had been entered previously and in some cases quite frequently, but something was different during the fatal entry.

Perhaps the entrants ignored some “small” detail of the company-specified safe work practices. Or perhaps the person was reacting to an emergency and entered the space without thinking about the dangers. At least 60 percent of the time victims of confined spaces accidents entered the space in an attempt to rescue an incapacitated coworker.

Never make an unauthorized CSE for any reason, especially to attempt a rescue. You should know how to summon emergency rescue services provided by your employer and how to direct them to each confined space site in the event of an emergency.

Examples of confined space incidents

An employee with three years' experience was assigned to clean out a three-foot deep vapor degreaser. The supervisor provided a long-handled broom and shovel for the job, and instructed the employee not

to enter the degreaser. The employee pumped the solvent out of the degreaser and instead of using the tools provided, climbed in to remove the remaining sludge. Quickly overcome by the vapors, the employee died of excessive solvent vapor inhalation.

Two maintenance employees were taking turns entering and repairing an open-topped tank that had contained solvents. Both were using self-contained breathing apparatus (SCBA) when entering the tank. For some reason, the employee inside the tank removed the SCBA's mask and was unconscious moments later. Attempting a rescue, the second employee entered the tank without putting on a SCBA respirator and was also overcome by solvent vapors inside of the tank. A third person working in the area realized what was happening, attempted a rescue, and also became incapacitated by the vapors in the tank. Both maintenance employees required hospitalization and the third employee died.

What is so hazardous about confined spaces?

Nearly every imaginable workplace hazard can potentially exist within a confined space. The characteristics of confined spaces can transform a seemingly minor concern into a life-threatening situation. Confined spaces frequently have poor ventilation, which can allow air contaminants to accumulate inside the space. Furthermore, it is difficult to aid or remove injured workers inside a confined space.

Most confined space fatalities are caused by air contaminants that you cannot see, smell, or otherwise detect with your senses. To make matters worse, many contaminants first affect you by impairing your judgment so you do not even realize you are in danger.

Serious accidents can also occur when liquids, gases or other stored energy sources are released into the confined space or when the equipment is accidentally started up. Follow your employer's procedures to ensure all potential energy sources are identified, shut off, and that lockout/tagout (LOTO) procedures are implemented before a CSE takes place.

Other injury hazards arise when employees are climbing into or out of confined spaces, working on scaffolds and at heights, using power tools, welding, or applying chemicals for cleaning, preparing, or refinishing surfaces within the space. Always wear the appropriate personal protective equipment and follow all safe work practices and procedures.

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Definitions

These definitions are based on OSHA Standard 29 CFR 1910.146, *Permit-Required Confined Spaces for General Industry*. Some spaces may be included in your company's CSE Program even though they do not meet all of the criteria listed below. For instance, a space may be designed for easy access or for occupancy, but if it contains, or is

used for something particularly hazardous, it may, nevertheless, be considered a permit-required confined space. An example might be the crew's quarters on a ship while it is being spray-painted.

Confined space

Any space that:

- Is large enough and configured in such a way that an employee can bodily enter and perform work
- Has limited or restricted means for entry or exit
- Is not designed for continuous employee occupancy

Permit-required confined space

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 that could trap or asphyxiate an entrant (e.g., converging walls, sloping floor)
- Contains any other recognized serious safety or health hazard

Confined space entry (CSE)

When any part of a person's body breaks the plane of the spaces opening.

Permit vs. non-permit

Not all confined spaces at your workplace are necessarily permit-required confined spaces. A non-permit confined space has all the characteristics of a permit-required space except that when it was evaluated, it did not contain actual or potential serious health or safety hazards. Such a space still has all the other characteristics of a confined space; however, if a hazard is accidentally or intentionally introduced, it could become a potentially life-threatening permit-required confined space.

Your employer will issue an entry permit for each permit-required CSE. Before doing so, they will use air-testing instruments to check for the presence of air contaminants and will take appropriate action to ensure that entry and work can be safely performed. Remember, hazards can change or accumulate with time and must be evaluated by properly trained and authorized individuals prior to every entry.

The CSE team

As a member of the CSE team, you may be assigned the duties of an entrant, attendant, or an area worker. Your employer will train you in the specific responsibilities of your role, as defined by your company's CSE Program. You will also be informed of the specific locations of confined spaces that you could potentially encounter in the normal scope of

your work. If you become aware of a space in your work area that you feel should be a permit-required confined space, discuss it with your supervisor and meanwhile, do not enter it.

Every employee associated with a CSE must fulfill his or her responsibilities or the consequences can be fatal. The list below will give an idea of the range of responsibilities to which you might be assigned as a member of the CSE team.

Entrants

Confined-space entrants are individuals who have received specific training and authorization from their employer to perform work in confined spaces. You must not enter a permit-required confined space until an entry supervisor has completed and signed an entry permit. No one is permitted to enter confined spaces without authorization. If you are an entrant, your employer will inform you of the hazards associated with each entry, teach you how to recognize those hazards and explain how they may potentially affect you. As an entrant, some of your duties will include:

- Knowing the hazards you may encounter during the CSE, including signs, symptoms, and consequences of exposure.
- Properly using the equipment provided (e.g., personal protective equipment, fall protection, ladders, body harnesses and other rescue equipment, emergency devices, testing, communication, ventilation, and monitoring equipment).
- Maintaining communication with the attendant.
- Alerting the attendant and exiting the space immediately if you detect a dangerous situation or a warning sign that you are experiencing contaminant exposure (e.g., irritation, dizziness, a feeling of intoxication).
- Exiting the space as quickly as possible whenever ordered by an authorized person, whenever you detect a condition prohibited by the permit, or when an evacuation alarm is activated.
- Making sure you understand the scope of work you are authorized to perform and the specific work practices, equipment, and materials you are expected to use.

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Attendants

An attendant is an individual who remains outside the space but is assigned to monitor activities and conditions within the confined space and in the surrounding area during a CSE. Your duties as an attendant will include:

- Knowing the hazards that entrants may encounter during the CSE including signs, symptoms, and consequences of exposure.

- Being aware of how entrants might act if exposed to a hazardous material.
- Keeping an accurate count and list of authorized entrants in the space.
- Remaining outside the space during the entry until relieved by another attendant.
- Communicating with authorized entrants.
- Monitoring conditions inside and outside the space to determine whether it is safe for the entrants to remain in the space.
- Summoning rescuers and other emergency service if needed.
- Keeping unauthorized persons away from the space and informing entrants and the entry supervisor if unauthorized persons have entered the space.
- Ordering evacuation of the space when:
 - A prohibited condition exists
 - A worker shows signs of adverse physiological effects of exposure to a hazard
 - An emergency outside the confined space exists
 - When the attendant cannot effectively and safely perform required duties
- Performing non-entry rescues (e.g., using a hand-operated hoist) as specified by your employer's rescue procedure.
- Refraining from any activity that may interfere with your primary duty to monitor and protect authorized entrants.

Entry supervisor

The entry supervisor is the individual who is responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry when required.

The standard allows an employee to be both an entry supervisor and entrant as long as the employee has had the appropriate training and the duties of one activity do not conflict with the duties of another.

Area employees

If there are confined spaces in your work area, you have responsibilities even if you have been instructed never to enter a confined space. To ensure safety, you should:

Be familiar with the location of confined spaces within your work area, especially those that have not been locked, barricaded, or otherwise protected from inadvertent entry.

Be aware of the hidden dangers that can exist within confined spaces.

Discuss with your supervisor the need to postpone any tasks you feel may endanger confined space entrants, especially tasks performed in the immediate area of the confined space.

Never attempt entry into a confined space to perform rescue.

Five steps to a safe CSE

Entering and working in a confined space can be accomplished safely if all of the CSE team members know and carry out their responsibilities effectively. No matter what your role, you can make a significant impact on your own and your coworkers' health and safety by doing five simple things:

1. Learn the locations of confined spaces in your work area.
2. Never conduct unauthorized entry, especially to rescue someone within the confined space.
3. Follow established work practices to the letter. Seemingly minor modifications may introduce new hazards into the confined space that could be life threatening.
4. Know your responsibilities concerning CSEs. If you are not sure, ask your supervisor.
5. If you observe or suspect a hazard, immediately bring it to the attention of the attendant and entry supervisor.



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RC 5019 R3

Confined Space Entry Program Elements

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Highlights:

- Combining effective health and safety programs with prudent CSE policies
- Written SCE programs
- Classifying confined spaces by hazard type: PRCS vs. NPCS
- How to identify, evaluate, and prevent unauthorized entry

For Confined Space Entry (CSE) operations, a comprehensive, up-to-date written program is the cornerstone of incident prevention. Whether CSEs occur daily in your workplace or once every few years, the written program must be regularly revised to accommodate changes and correct deficiencies.

Even an excellent written program will be ineffective unless it is backed by a commitment from top management and is consistently enforced and uniformly applied in the workplace.

This reference note describes how to combine the elements of effective safety and health programs with prudent CSE practices. Use OSHA Standard 29 CFR 1910.146, *Permit Required Confined Space Entry*, to determine your regulatory responsibilities.

Written CSE Program

Your company's written CSE program should minimally contain all of the elements described in this reference note.

Top management should publish its support of the program in a statement of policy, indicating a goal of eliminating confined space incidents in addition to complying with all applicable regulatory standards. This policy statement should contain a directive that prohibits permit required confined space entries unless they are absolutely unavoidable.

The written program should clearly define all terms, confined space locations, and other program elements as they are used locally, as misunderstandings can have catastrophic effects. In particular, note the following definitions that have a significant impact on this discussion of program elements.

Confined Space (CS)

A space that:

- Is large enough and configured such that an employee may physically enter it to perform work,
- Has limited or restricted means for entry or exit, and
- Is not designed for continuous employee occupancy.

Permit Required Confined Space (PRCS)

A confined space that meets one or more of the following conditions:

- Could potentially contain an atmosphere that is hazardous or immediately dangerous to life and health (IDLH).
- Stores a material that could engulf an entrant (such as materials found in grain silos, water towers, rail cars, etc.).
- An entrant could become trapped and mechanically asphyxiated due to the physical parameters of the space (i.e. sloped floors or converging section).
- The presence of other potential or recognized hazards that could hinder or prevent self-rescue (i.e. process pipes and equipment, electrical conduit, powered equipment that should be locked and tagged out prior to entry, etc.)

Non-Permit Confined Space (NPCS)

A CS that does not contain or have the potential to contain a serious, acute hazard, nor meets any of the above listed criteria.

If you have a PRCS and are in an industry covered by the OSHA Standard, you are subject to that standard. It is wise to implement a CSE program, regardless of your industry or the types of confined spaces in your facilities or jobsites.

Responsibility and Accountability

Outline the specific responsibilities for every significant position in the CSE program, indicating who will be accountable.

Examples of such positions include:

- Program administrator
- Rescuers
- Entry supervisors
- Attendants
- Authorized entrants
- Trainers
- Air samplers
- Area supervisors
- Area workers

It is the responsibility of the employer to inform other contractors or employers at the worksite of any confined spaces and the potential hazards contained within. Both host employers and contractors are responsible for preventing incidents that can occur within confined spaces.

Identify, Evaluate, and Prevent Unauthorized Entry into Confined Spaces

Identify each confined space at your facility and evaluate potential hazards that might be present in each space. There should be clear signage identifying permit required confined spaces that describe its presence and associated hazards. In conjunction with signage, spaces can be separated by controlled access physical barriers (gating systems, hatches, access cages, etc.) that prevent unauthorized access to the space. Access permissions should typically be obtained from authorized management, such as the entry or area supervisors. When utilizing these systems, it is important to be cognizant of their effectiveness; employers may need to provide supplemental training or multilingual signage for employees who do not speak English as their first language. This ensures facility-wide adherence to desired confined space entry practices and controls.

The location of every confined space should be listed with a clear distinction of whether it is a PRCS or NPCS. When in doubt, it is better to be conservative and label the space as PRCS.

Confined spaces can present more than one hazard.

- Physical hazards that might exist include contact with moving parts, the potential for engulfment, becoming trapped within the space, or falling from heights.
- Hazardous atmosphere examples include oxygen deficiency or enrichment, flammable or combustible atmosphere, or the potential for the presence of a toxic gas.

Hazards to consider are not only those that exist within the confined space prior to entry but also hazards that might be introduced into the space by activity occurring after entry.

Classification of Confined Spaces

NIOSH developed classification criterion for hazardous atmospheres within confined spaces. This system ranks a space based on the oxygen content of the air in the space, the flammability of any gases and vapors present in the space, and the concentration of toxic substances that may be present in the confined space. This classification system is useful in that it creates a simple means of determining work practices and rescue procedures for varying atmospheric conditions.

This table is from NIOSH Publication 80-106.

Confined Space Classification Table

Parameters	Class A	Class B	Class C
Characteristics	Immediately dangerous to life and health (IDLH) atmosphere. Rescue procedures require the entry of more than one individual, fully equipped with life support equipment. Maintenance of communication requires an additional standby person stationed within the confined space.	Dangerous, but not IDLH. Rescue procedures require the entry of no more than one individual, fully equipped with life support equipment. Indirect visual or auditory communication should be established with workers at all times.	Potentially hazardous environment. Requires no modification of work practices. Standard rescue procedures and communication methods.
Oxygen	16% or less, or greater than 25% enrichment.	16.1% to 19.4% or 21.5% to 25% enrichment.	19.5% – 21.4% enrichment.
Flammability Characteristics	Greater than or equal to 20% of lower flammable limit (LFL).	Ranging between 10 to 19% of LFL.	10% of LFL or less.
Toxicity	Exposures levels to contaminants create an IDLH atmosphere. Refer to 29 CFR Part 1910 Sub Part Z for applicable limits.	Exposure levels exceed the PEL as referenced in 29 CFR Part 1910 Sub Part Z	Exposure levels are below the PEL as referenced in 29 CFR Part 1910 Sub Part Z

Hazards within confined spaces will vary in terms of the nature of the hazard that might exist, the degree of the hazard, and the extent to which the hazard can be eliminated or controlled. Confined spaces should be classified on that basis.

A confined space that contains an actual or potential serious hazard is a permit required confined space (PRCS). Permit required spaces can be reclassified as non permit spaces if the actual or potential hazards can be removed prior to anyone entering the space. Some examples how a PRSC could be reclassified as an a non permit space include using lockout procedures to prevent moving parts, or actions such as insulating piping to the space to prevent the entry of materials that could strike, crush or engulf the entrant.

Conversely, if a potential hazard is created within a confined space due to the activity performed within the space, the confined space is considered to be a PRCS. For example, operations such as welding or applying coatings to the interior of a confined space are likely to introduce a potential atmospheric hazard. Such hazards within a confined space should be controlled while workers are performing those operations.

The use of engineering controls, such as a ventilation system, does not eliminate the hazard, nor does it render a PRCS a NPCS. However, such controls may allow for a streamlined entry procedure. See section (c)(5) of OSHA's CSE Standard.

Permit System

Establishing a CSE permit system includes developing the content of the actual permit (the OSHA Standard specifies minimum permit content), as well as establishing a system for issuing, posting, canceling, and auditing permits. Permitting is a step-by-step, documented procedure that is intended to control or eliminate potential hazards within a confined space during entry operations.

Develop a step-by-step checklist to ensure that hazards within and near confined spaces are either eliminated or controlled prior to entry. Develop a detailed checklist for each class or type of confined space in your workplace.

Establish clear procedures for permit cancellation and for returning the space to normal status. These procedures should require reactivation of unauthorized entry prevention methods as soon as the permit is canceled and before the space is left unattended. Specify the steps that need to be taken to safely return the space to normal service.

The OSHA Standard states that: "The employer shall retain each canceled entry permit for at least one year..." Cancelled entry permits should be reviewed within that period to ensure that safe entry procedures are consistently being followed. Corrective actions should be taken and documented as needed.

Entry Preparations

At some point, all the efforts put into a confined space program are distilled down to one crucial question: "Is this space adequately prepared to permit safe entry and work?" The program, therefore, should contain clear guidelines (standardized procedures) for planning and preparing the confined space for entry. Planning the entry typically involves the following actions:

- Identifying and documenting the reason for entry, names of authorized entrants, and contents within the PRCS.
- Identifying hazards associated with the entry. This may require testing the oxygen, flammable gas, carbon monoxide, or hydrogen sulfide concentrations depending on the work environment. Refer to the classification table for guidance. Testing for the presence of other noxious or toxic chemicals should be conducted as well.
- Identifying the means of entry and exit (e.g. minimum acceptable passageway size for routine versus rescue entry).
- Identifying any ignition sources and fire protection controls that are in place.
- Identifying and providing the appropriate personnel protective equipment to authorized entrants including but not limited to; respirators, protective coveralls, goggles, gloves, aprons, and fall arrest harnesses and systems, as necessary.
- Cleaning, inerting, purging, and ventilating the PRCS of toxic gases if needed.
- Identifying and placing all equipment to perform necessary tasks near the confined space.
- Surrounding the PRCS with warnings signs and/or physical barriers to prevent unauthorized entry.
- Locking and tagging out powered mechanical hazards present within the PRCS.
- Notifying the area and/or site EHS manager regarding all relevant details of the confined space entry.
- Reviewing rescue plans and procedures with involved employees and managers. After this, the entry supervisor can sign off on the permit and the entry can begin.

Equipment

The CSE program and entry permits should specify all necessary atmosphere testing, emergency ventilation work and other instruments/equipment to be used during entry into permit spaces. The CSE program should include field check and calibration requirements that address all appropriate equipment, such as atmosphere testing and ventilation equipment, and it should define equipment inspection criteria and frequency.

Rescue Procedures

The primary emphasis of the CSE program is incident prevention, not rescue. In fact, the more difficult it is to perform effective rescue, the more critical hazard control becomes. The CSE program should require specific, pre-planned rescue procedures for each PRCS before entry is authorized.

Rescue options should be attempted in this order of priority:

1. **Self-Rescue:** Entrants leave the space when out-of-permit conditions or hazards develop, or if they or the attendants notice behavioral changes that may indicate exposure to contaminants.
2. **Non-Entry Rescue:** Attendant removes the entrants via lifelines attached to harnesses, which the entrants wear for the duration of the entry.
And only if the first two options are not possible...
3. **Rescue Team Entry:** A member of a designated, trained rescue team enters the space to remove the entrants.

Rescue team availability must be confirmed via a predetermined communication method before an entry is authorized. Four to six minutes should be considered a maximum acceptable response time.

Develop a rescue plan for each space and conduct rescue drills to determine the capabilities and response time of the rescue team. If you use an in-house rescue team, each member must be trained in basic first aid and cardiopulmonary resuscitation (CPR), and at least one rescue team member must hold current certification.

Training

Employers must train all employees that are required to work in PRCS prior to conducting any actual work within the space. Once training has been completed, employers need to ensure that employees have learned the requisite knowledge before certifying them as authorized entrants. Further training may be needed if there are changes in the entrants job tasks, confined space hazards profile, or if an employee is deficient in their job performance. Employers should document and furnish employees with certificates after training as a record of completion. The certificates should include the employee's name, training dates, and signature of trainers.

Typical duties held by authorized entrants include:

- Being aware of all present and potential PRCS hazards including; modes of exposure, symptoms of exposure, consequences of potentially long term exposures and alarm systems associated with the presence of a prohibitive atmosphere.
- Becoming proficient in the use of personal protective equipment. This includes ensuring any necessary fit or medical testing associated with a site respiratory protection program. OSHA covers respiratory protection requirements in OSHA CFR 1910.134, *Respirator Protection*.
- Maintaining communication with authorized attendants so that the entrant's status can be monitored and he or she can be made to evacuate if necessary.
- Exercising their due diligence with regards to any potentially unsafe conditions within the PRCS and alerting the attendant to the presence of the conditions.

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Permit Required Confined Space OSHA 29 CFR 1910.146

OSHA Checklist from Liberty Mutual Insurance

This checklist will assist you with assessing areas of risk, existing controls, and the key elements of the OSHA Permit Required Confined Space standard. This standard contains requirements that must be captured in a written program and it provides an overview of those requirements. You must tailor it to meet your own specific organizational processes/operations.

When the checklist is complete, refer to your existing program or Liberty Mutual's customizable program to determine if any modifications are necessary. Also, review your related written procedures, controls (engineering, training, and behavior), safety metrics, etc., to ensure they are in alignment.

This checklist may not address all potential situations that may cause injury, property, or environmental losses.

Company Name:

Location:

Assessment by:

Date:

This safety program and accompanying information does not identify all possible hazards and we cannot be responsible on your behalf for your obligations under any law, rule or regulations. The principles contained in the material are general in scope and, to the best of our knowledge, current at the time of publication. Liberty Mutual specifically disclaims all liability for damages or personal injury alleged to arise from reliance on the information contained in this document.

OK	No	N/A	Key Elements	Assessment/Comments
			Best Practices	
			One key individual is responsible for overseeing the Permit Required Confined Space program that can make decisions and take action to audit and improve the program.	
			Copies of the company policies and guidelines regarding the program are available at the facility that supports the various program elements.	
			There is adequate communication about program requirements among facility personnel.	
			Program team members receive adequate training and education about the requirements to understand the goals and policies of the site-specific program.	
			Managers, supervisors and employees are evaluated on their support of compliance programs during personnel performance reviews.	
			<p>Help Note: This OSHA program review tool contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces. This standard does not apply to agriculture, to construction, or to shipyard employment.</p> <p>Best Practices on Permit Required Confined Spaces (PRCS) can be found in ANSI Z117.1, <i>Safety Requirements for Confined Spaces</i>. This ANSI standard provides minimum safety requirements to be followed while entering, exiting and working in confined spaces at normal atmospheric pressure. Additionally, the purpose of the standard is to establish minimum requirements and procedures for the safety and health of employees who work in, and in connection with, confined spaces.</p> <p>The questions that appear throughout this checklist follow the OSHA 1910.146 Permit Required Confined Space Program. The audit addresses only the primary requirements of the standard; not all paragraphs of the OSHA PRCS standard are included.</p>	
			PRCSP General Requirements	
			1910.146 (c) (1) The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.	
			<p>Help Note: Proper application of the decision flow chart attached to this checklist or Appendix A to section 1910.146 would facilitate compliance with this requirement. Additionally, utilizing the definitions section within the PRCS standard will be helpful to successfully complete a PRCS program audit.</p>	
			1910.146 (c) (2) If the workplace contains permit spaces, the employer shall inform workers by posting danger signs or other equally effective means identifying the location of the permit space.	
			<p>Help Note: A sign reading DANGER – PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER or similar language would satisfy this requirement.</p>	

OK	No	N/A	Key Elements	Assessment/Comments
			PRCSP General Requirements (Cont'd.)	
			1910.146 (c) (3) If the employer decides its employees will not enter permit spaces, the employer must take effective measures to prevent its employees from entering permit spaces.	
			1910.146 (c) (4) If employees are required to enter permit spaces, the employer shall develop and implement a written permit space program.	
			Help Note: The written program shall be available for inspection by employees and their authorized representatives.	
			PRCSP	
			1910.146 (d) (1) The employer has implemented measures necessary to prevent unauthorized entry into permit spaces.	
			1910.146 (d) (2) The employer has identified and evaluated the hazard spaces prior to employee entrance.	
			1910.146 (d) (3),(i),(ii),(iii),(iv),(v),(vi) The employer has developed and implemented the means, procedures and practices necessary for safe permit space entry operations.	
			Help Note: Refer to the last 5 entry permits for detailed information. Entry conditions shall be specified, authorized entrants must have the opportunity to observe monitoring or testing of the spaces, the permit spaces are isolated to prevent hazardous contaminant entry, barriers implemented to prevent pedestrian or vehicle hazards from entering the space, and the conditions are verified for acceptable entry throughout the duration of the authorized entry.	
			1910.146 (d) (4),(i),(ii),(iii),(iv),(v),(vi),(vii),(viii),(ix) The employer provides the following:	
			■ Testing and monitoring equipment	
			■ Mechanical ventilation equipment	
			■ Communication equipment	
			■ Personal protective equipment	
			■ Lighting equipment	
			■ Barriers and shields	
			■ Ladders for safe ingress and egress	
			■ Rescue equipment, except that which the rescue service provides	
			■ Any other equipment necessary for safe entry into and rescue from permit spaces at no costs to employees	
			Help Note: The employer must ensure that employees use provided equipment properly and adequate training shall be provided.	

OK	No	N/A	Key Elements	Assessment/Comments
			PRCSP (Cont'd.)	
			1910.146 (d) (5),(i) Test conditions in the permit space to determine acceptable entry conditions exist before entry is authorized, except if isolation of a space is infeasible because the space is large or part of a continuous system such as a sewer.	
			Help Note: Continuous monitoring should be conducted for spaces that cannot be isolated due to potential atmospheric hazards that could occur.	
			1910.146 (d) (5),(iii) When testing for atmospheric hazards, test first for Oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.	
			Help Note: The employer must ensure adequate calibration and user understanding of atmospheric testing equipment. The order of hazard sampling must be followed as described.	
			1910.146 (d) (6) Employers provide at least one attendant outside the permit space into which entry is authorized for the duration of the entry operations	
			Help Note: Attendants may be assigned to more than one PRCS, provided the duties can be effectively performed as outlined in section (i), <i>Duties of Attendant</i> , of this standard for each PRCS operation.	
			1910.146 (d) (8) Persons with active roles in entry operations, such as authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere, have identified duties and adequate training has been provided to each employee.	
			Help Note: Training must be provided as outlined in section (g), <i>Training</i> , of this standard.	
			1910.146 (d) (9) Rescue and emergency procedures have been developed and implemented for summoning services, for rescuing entrants from permit spaces, for providing emergency services to rescued employees and for preventing unauthorized personnel from attempting a rescue.	
			Help Note: Defining on-site or off-site rescue along with conducting on site practice training in the spaces, as well as specific contact phone numbers and pre-notification of PRCS are required.	
			1910.146 (d) (10) A system has been developed and implemented for preparation, issuance, use and cancellation of entry permits.	
			1910.146 (d) (14) Facility management review of the permit space program using canceled permits retained from within 1 year after each entry for revisions to the program as necessary to ensure that employees participating in the entry operations are protected from permit space hazards occur.	
			Help Note: Employers may perform a single annual review covering all entries performed during a 12-month period. If no entries during the 12-month period occurred, no review is necessary.	

OK	No	N/A	Key Elements	Assessment/Comments
			Permit System	
			1910.146 (e) (1) (2) (3) Before entry is authorized, the employer shall document the completion of measures required in paragraph (d)(3) of this standard by preparing an entry permit and the entry supervisor identified on the permit signs the entry permit to authorize entry and posts the permit at the permit space.	
			Help Note: A site-specific written confined space entry permit must be developed. Proper development similar to the attached permit example to this audit tool, or Appendix D to Section 1910.146 would facilitate compliance with this requirement.	
			1910.146 (e) (4), (5) (i), (ii) The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit purpose.	
			Help Note: The entry supervisor shall terminate the entry and cancel the entry permit when the operations covered by the permit have been completed or a condition that is not allowed under the entry permit arises in or near the permit space.	
			1910.146 (e) (6) The employer retains each canceled entry permit for at least 1 year to facilitate reviews of the permit-required confined space program.	
			Help Note: Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.	
			Entry Permit	
			1910.146 (f) (1),(2),(3),(4),(5),(6),(7),(8),(9),(10) The entry permit shall identify the space to be entered, including the following:	
			<ul style="list-style-type: none"> ■ Purpose of entry, date and the authorized duration of the entry permit. 	
			<ul style="list-style-type: none"> ■ Authorized entrants, attendants, entry supervisor who originally authorized the entry and the currently serving entry supervisor all by name, and which authorized entrants are inside the permit space. 	
			<ul style="list-style-type: none"> ■ The hazards of the permit space to be entered. 	
			<ul style="list-style-type: none"> ■ Measures used to isolate the space and to eliminate or control permit space hazard prior to entry. 	
			<ul style="list-style-type: none"> ■ The acceptable entry conditions and the results of initial and periodic tests performed, accompanied by the names or initials of the testers and indication of when the tests were performed. 	
			Help Note: Isolation measures can include the lockout or tagging of equipment and procedures for purging, inserting, ventilating and flushing permit spaces.	

OK	No	N/A	Key Elements	Assessment/Comments
			Entry Permit (Cont'd.)	
			1910.146 (f) (11),(12),(13),(14) The entry permit shall identify emergency and rescue services that can be summoned, including:	
			<ul style="list-style-type: none"> ■ The means and current telephone numbers 	
			<ul style="list-style-type: none"> ■ Communication procedures that will be used by entrants and attendants to maintain contact during entry 	
			<ul style="list-style-type: none"> ■ Required PPE 	
			<ul style="list-style-type: none"> ■ Testing devices 	
			<ul style="list-style-type: none"> ■ Alarm systems 	
			<ul style="list-style-type: none"> ■ Rescue equipment 	
			<ul style="list-style-type: none"> ■ Special conditions that may affect safety of entrants 	
			<ul style="list-style-type: none"> ■ Any additional permits such as hot work, etc. 	
			Training	
			1910.146 (g) (1),(2),(2)(i),(ii),(iii),(iv), (3), (4) The employer shall provide training to each affected employee:	
			<ul style="list-style-type: none"> ■ Before the employee is first assigned PRCS duties and prior to changes in assigned duties. 	
			<ul style="list-style-type: none"> ■ Whenever there is a change in the permit space operations that presents a hazard on which the employee has not been previously trained. 	
			<ul style="list-style-type: none"> ■ When inadequacies or deviations to the PRCS procedures are observed so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned. 	
			Help Note: The employer shall establish employee proficiency in the duties required and shall introduce new or revised procedures as necessary and certify that the training has been accomplished with each employee's name, the signature or initials of the trainers and the dates of training.	
			Duties of Authorized Entrants	
			1910.146 (h) (1),(2),(3),(4)(i),(ii), (5),(i),(ii),(iii),(iv) The employer shall ensure that all authorized entrants know the hazards that may be faced during entry, including information on:	
			<ul style="list-style-type: none"> ■ The mode, signs or symptoms, and consequences of the exposure. 	
			<ul style="list-style-type: none"> ■ Properly using required equipment. 	
			<ul style="list-style-type: none"> ■ Communicating with the attendant as necessary to monitor entrant status. 	

OK	No	N/A	■ Key Elements	Assessment/Comments
			■ Duties of Authorized Entrants (Cont'd.)	
			■ Alerting the attendant upon recognizing any warning signs or symptom of exposure to a dangerous situation	
			■ If the entrant detects a prohibited condition	
			Help Note: The entrant must exit from the permit space as quickly as possible if an order to evacuate is given by the attendant or entry supervisor, the entrant recognized any warning sign or symptoms of exposure to a dangerous situation or an evacuation alarm is activated.	
			Duties of Attendants	
			1910.146 (i) (1),(2),(3),(4),(5) The employer shall ensure that each attendant:	
			■ Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure	
			■ Is aware of possible behavioral effects of hazard exposure in authorized entrants	
			■ Maintains an accurate count of authorized entrants	
			■ Identifies who is in the permit space	
			■ Remains outside the permit space during entry operations until relieved by another attendant	
			■ Communicates with authorized entrants as needed to monitor entrant status	
			■ Alerts entrants of the need to evacuate	
			1910.146 (i) (6),(i),(ii),(iii),(iv) The employer shall ensure that each attendant:	
			■ Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space	
			■ Orders the authorized entrants to evacuate the permit space if:	
			a) Prohibited conditions are detected	
			b) Behavioral effects of a hazard exposure in an entrant occurs	
			c) If a condition outside the space could endanger the entrant	
			d) If the attendant cannot effectively and safely perform all the assigned duties	

OK	No	N/A	Key Elements	Assessment/Comments
			Duties of Attendants (Cont'd.)	
			1910.146 (i) (9), (10) The employer shall ensure that each attendant has been trained on how to perform non-entry rescue procedures and that the attendant performs no duties that interfere with the attendant's primary duty to monitor and protect the authorized entrants.	
			Duties of Entry Supervisors	
			1910.146 (j), (1), (2) The employer shall ensure that each entry supervisor knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure, as well as verifying when safe entry can begin.	
			Help Note: The entry supervisor shall verify that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.	
			1910.146 (j), (3), (4), (5), (6) The employer shall ensure that each entry supervisor:	
			<ul style="list-style-type: none"> ■ Terminates the entry and cancels the permit as required by paragraph (e) (5) discussed earlier in this audit tool. 	
			<ul style="list-style-type: none"> ■ Verifies that rescue services are available and that the means to contact them is operable. 	
			<ul style="list-style-type: none"> ■ Removes unauthorized individuals who enter, or attempt to enter, the permit space during entry operations. 	
			<ul style="list-style-type: none"> ■ Ensures the entry operations remain consistent with terms of the written permit. 	
			Help Note: For off-site rescue, formal notification prior to entry shall be performed. Review of past PRCS completed permits will be needed to assess compliance in this area of the standard.	
			Rescue and Emergency Services	
			1910.146 (k), (1), (i) The employer who designates rescue and emergency services shall evaluate the rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.	
			Help Note: Determining what is timely will vary according to the specific hazards involved in each entry. For example, 1910.134 OSHA's Respiratory Protection standard requires that employers provide a standby person or persons capable of immediate action to rescue employee(s) wearing respiratory protection while in work areas defined as IDLH atmospheres.	

OK	No	N/A	Key Elements	Assessment/Comments
			Rescue and Emergency Services (Cont'd.)	
			1910.146 (k), (1), (ii), (iii), (iii)(A), (iii)(B), (iv), (v) The employer shall evaluate a prospective rescue service's ability, in terms of:	
			<ul style="list-style-type: none"> ■ Proficiency with rescue-related tasks and equipment. 	
			<ul style="list-style-type: none"> ■ Functioning appropriately while rescuing entrants from identified permit spaces. 	
			<ul style="list-style-type: none"> ■ The ability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified. 	
			<ul style="list-style-type: none"> ■ Is equipped for and proficient in performing the needed rescue services. 	
			Help Note: Employers shall inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site and provide the team with access to all permit spaces so the rescue team can develop appropriate rescue plans and practice rescue operations.	
			1910.146 (k), (2), (i), (ii), (iii), (iv) The employer whose employees have been designated to provide permit space rescue and emergency services shall provide affected employees with needed PPE to conduct permit space rescues safely and train affected employees so they are proficient in the use of the PPE, at no cost to the employees.	
			Help Note: Employers shall ensure that rescue-trained employees successfully complete the training required to establish proficiency as an authorized entrant, as paragraphs (g) and (h) of the standard outline, as well as basic first-aid and cardiopulmonary resuscitation (CPR). The employer shall ensure that at least one member of the rescue team or service holding a current certification in first aid and CPR is available, and that affected employees practice making permit space rescues at least once every 12 months.	
			Employee Participation	
			1910.146 (l), (1) The employer shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by section (c) <i>General Requirements</i> .	
			Help Note: Employers shall make available to affected employees all information required to be developed by this standard.	

Sample Confined Space Entry Permit

Date: _____ Start Time: _____ End Time: _____

Entry personnel must complete this permit and receive authorization from the entry supervisor prior to entry. This permit must be completed in its entirety and posted at the work area until entry is terminated. Return completed permit to supervisor when work is complete. Each permit is valid for an individual 8-hour period only. A separate permit is required for each job location daily.

Building / Location: _____ Space ID #: _____

Type of Confined Space (Vault, Vessel, Manhole, Silo, Pit, Tank, etc.): _____

Purpose of Entry: _____

Entrant Supervisor: _____ Attendant(s): _____

Authorized Entrant(s): _____

Communication Equipment (Voice, Radio, Visual, etc.): _____

Potential Hazards				Precautions Taken Before Entry						
Yes	No		Yes	No	Yes	No	Yes	No		
<input type="checkbox"/>	<input type="checkbox"/>	Moving Equipment	<input type="checkbox"/>	<input type="checkbox"/>	Lockout Equipment	<input type="checkbox"/>	<input type="checkbox"/>	First Aid Kit Onsite	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Toxic Vapor	<input type="checkbox"/>	<input type="checkbox"/>	Lockout Input Lines	<input type="checkbox"/>	<input type="checkbox"/>	Protective Clothing	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Unknown Chemicals	<input type="checkbox"/>	<input type="checkbox"/>	Lockout Valves	<input type="checkbox"/>	<input type="checkbox"/>	Eye Protection	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Flammables	<input type="checkbox"/>	<input type="checkbox"/>	Pipes Blanketed	<input type="checkbox"/>	<input type="checkbox"/>	Fire Extinguisher	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Poor Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	Test Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	Hearing Protection	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Corrosive Materials	<input type="checkbox"/>	<input type="checkbox"/>	Test for Toxic Vapor	<input type="checkbox"/>	<input type="checkbox"/>	Complete Hot Work Permit	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Inadequate Light	<input type="checkbox"/>	<input type="checkbox"/>	Provide Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	Secure Area-barricades/signs	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Dust	<input type="checkbox"/>	<input type="checkbox"/>	Purge Space with Air	<input type="checkbox"/>	<input type="checkbox"/>	Lighting (explosion proof)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Electrical Shock	<input type="checkbox"/>	<input type="checkbox"/>	Read MSDS(s)	<input type="checkbox"/>	<input type="checkbox"/>	Use Non-Sparking Tools	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Difficult Entry/Exit	<input type="checkbox"/>	<input type="checkbox"/>	Tripod and Harness	<input type="checkbox"/>	<input type="checkbox"/>	Ground Fault	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Venomous Insects	<input type="checkbox"/>	<input type="checkbox"/>	Respirator Onsite	<input type="checkbox"/>	<input type="checkbox"/>	Rescue Team Ready**	<input type="checkbox"/>	<input type="checkbox"/>
		**On Site/Off Site:			Contact Notification #: (_____)			Time:		
								Date:		

Atmospheric Monitoring Results

Instrument No.: _____ Battery checked: Yes Status: Pass / Fail

Gas	Limit	Initial Result	Result	Result	Result	Result	Result
Oxygen	19.5% to 23.5%						
Combustibles (LEL)	<10% LEL						
Carbon monoxide	<35 ppm						
Hydrogen sulfide	<10 ppm						
Time tested:							
Person performing testing:							

Monitor continuously, recording results every two hours. Retest after breaks and lunch.

Supervisor Authorizing Entry:

Signature: _____

Time: _____

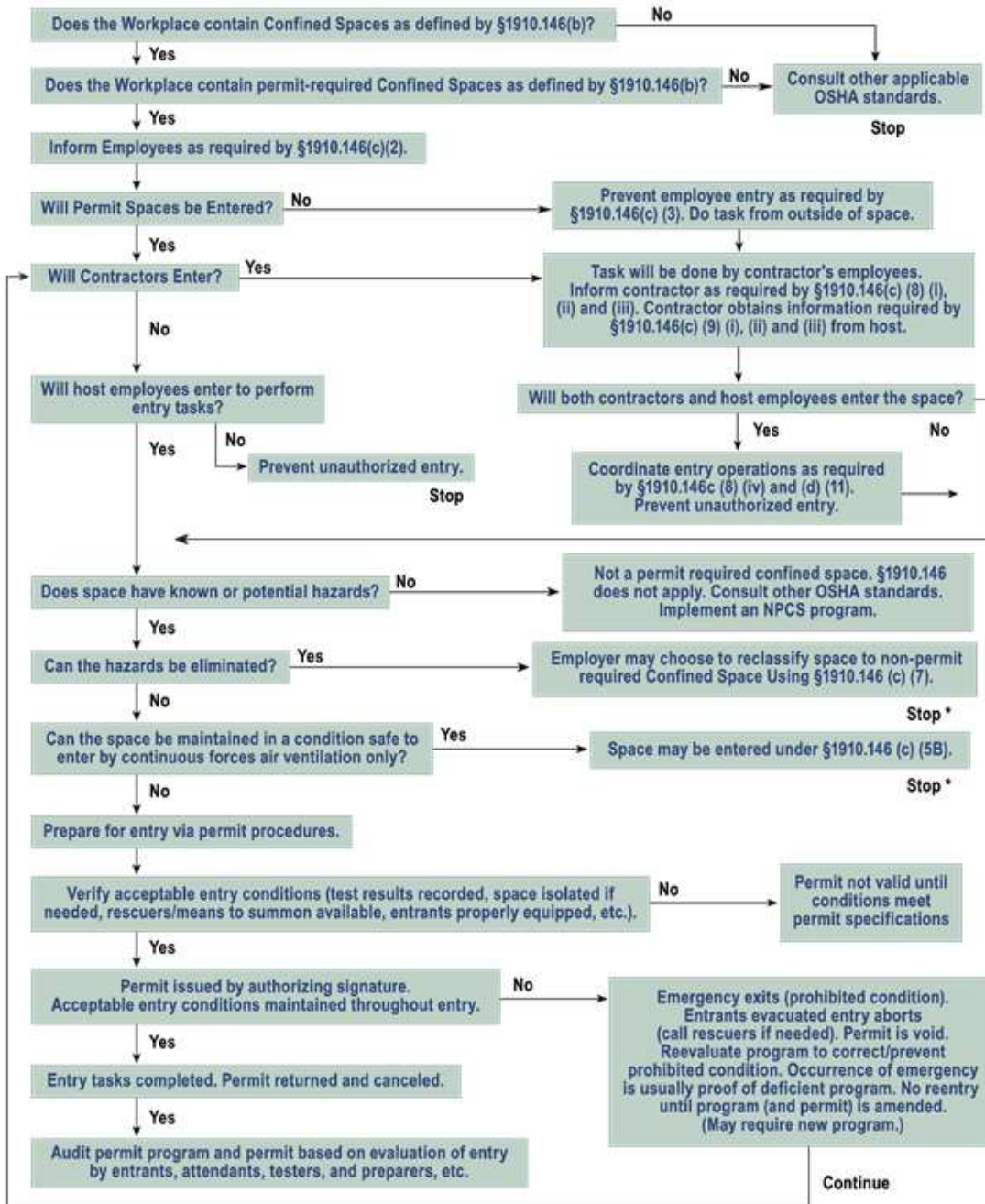
Date: _____

Job Tasks Completed: YES No Comments: _____

Job Terminated: YES No Reason For Termination: _____

External Fire and Ambulance Contact Number: _____

Decisionmaking Process



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

The illustrations, instructions and principles contained in the material are general in scope and, to the best of our knowledge, current at the time of publication. No attempt has been made to interpret any referenced codes, standards or regulations. Please refer to the appropriate code-, standard-, or regulation-making authority for interpretation or clarification. Provided that you always reproduce our copyright notice and any other notice of rights, disclaimers, and limitations, and provided that no copy in whole or in part is transferred, sold, lent, or leased to any third party, you may make and distribute copies of this publication for your internal use.