

In progress

Basically a Confined Space Entry Plan has to answer the following questions:

- what's a confined space?
- what conditions make a permit space (specify hazardous atmosphere and acceptable atmosphere)?
- do we have any?
- what makes them a permit space?
- what will be done to make the entry and operations safe?
- what do our employees need to know/do?
- what do contractors need to know/do?
- what will be done if something goes wrong?
- recordkeeping (including permit process) and assessment of entries.

That's about it in a nutshell.

The end product should be one that is easy to implement and enforce as well as flexible enough to change as needed when the space hazards change or new spaces are added.

As with all programs, do not hide the reason for the program, the identification of permit spaces and hazards, in the back. That's like leaving the turkey in the kitchen and just serving up the side dishes.

Sample Confined Space Entry Plan

Purpose

The purpose of this written program is protect the health and safety of _____ employees who enter confined spaces and/or are assigned to serve as attendants or rescue personnel. This program is also intended to insure compliance with the requirements of OSHA 29 CFR 1910.146 and Department of Commerce Chapter 32.28 & 32.29.

The Plan does not include work locations that do not meet the definition of Permit Required Confined Space or fall under a different standard, such as trenching.

Following provision of all information required by the above standard and Comms this Plan was developed with consultation with affected employees and their authorized representatives.

Definitions:

	Hazardous Atmosphere	Acceptable Entry Atmosphere without respirators
Oxygen	Less than 19.5% Greater than 23.5%	19.5-23.5%
Air contaminants, physical effects Airborne Combustible Dust* Explosive contaminants	Lower Flammability Limit (LFL) Lower Explosive Limit (LEL)	LESS THAN 10% OF THE LIMIT
Air contaminants, health effects	IDLH** Greater than exposure limits, Permissible Exposure Limits, Ceiling Limits, Action Limits, Short Term Exposure Limits In the 1992 1910.1000 adopted by Comm 32.35(1)	Under exposure limits. Keep in mind, PELs and ALs are based on 8 hour Time Weighted Average (TWA). Ceiling limits are DO NOT EXCEED Short Term are average over 15 min.
Sewer***	Greater than 10ppm H ₂ S Greater than 35ppm CO	Less than 10ppm H ₂ S TWA Less than 35ppm CO TWA

*OSHA 1910.146 states greater than flammability or explosive limits are hazardous. Comm 32.29 for public sector employers states no entry when the atmosphere is equal to or greater than explosive limits.

**IDLH: Immediately Dangerous to Life and Health, can kill you on entry or soon thereafter.

***Appendix E to 1910.146 Sewer System Entry states “hydrogen sulfide or carbon monoxide at or above 10 ppm or 35 ppm, respectively, measured as an 8-hour time-weighted average.”

Confined Space:

- Difficult to enter
- Not designed for continuous occupancy
- Must enter to perform work (**any** part of body.)

Non Permit Spaces do not have additional hazards and are not covered by OSHA 29 CFR 1910.146 and Department of Commerce Chapter 32.28 & 32.29.

Permit Required Confined Space:

- Meets definition of the standard for confined space.
- Contains an atmospheric hazard
- Is so configured that an entrant may not be able to get out unassisted* or so that entrant could be trapped or asphyxiated.
- Contains a material that can engulf an entrant
- Other recognized safety and health hazards (unguarded electric or moving equipment)

*slightly more than 1910.146 states.

The following Spaces have been identified and assessed for status in _____

Assessment Date:

Location	Permit or Non Permit*	Hazard	Employees will enter Y/N

* When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the space shall be reevaluated and, if necessary, reclassified as a permit-required confined space.

These locations, with the exception of manholes in traffic areas, have been posted with a sign that reads

DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER.

All employee orientation includes a memo identifying these spaces and that entry will only be made by trained personnel in compliance with OSHA 29 CFR 1910.146 and Department of Commerce Chapter 32.28 & 32.29.

Every Confined Space, especially non permit, shall have a pre-entry hazard assessment to identify all current hazards in the space and from the work to be conducted in the space. The Assessment Table shall be updated as necessary. (A controlled hazard, such as LP gas lines may become an uncontrolled hazard due to equipment failure or pipe leaks.)

Contractors: when employees of another employer (contractor) perform work that involves permit space entry (Job Title) will:

1. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section;
2. Apprise the contractor of the elements, including hazards identifies and the host employers experience with the space, that make the space in question a permit space;
3. Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;
4. Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph (d)(11) of this section; and
5. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

ALL EMPLOYERS WHO HAVE A NON ENTRY POLICY SHALL INCLUDE A STATEMENT REGARDING THAT POLICY AND CAN CONCLUDE THIS DOCUMENT AT THIS POINT.

ALL EMPLOYERS WHO HAVE EMPLOYEES WHO ENTER PERMIT REQUIRED CONFINED SPACES SHALL CONTINUE.

Appendix A contains specific hazards and the specific safe entry procedures for those hazards for every Permit Required Confined Space Location employees will be required to enter.

General Safety Procedures:

Smoking and open flames: smoking and open flames shall not be allowed within 10 feet of a confined space.

Working in streets: work at confined spaces which are located in streets shall be performed with the following:

- (a) A vehicle's beacon and 4-way flashers shall be activated upon approach to an entrance of a confined space.
- (b) A vehicle shall be parked to permit traffic to flow in an unobstructed manner and, where possible, to provide protection for the employees.
- (c) A vehicle shall be parked so vehicle exhaust cannot accumulate in the confined space. If this is not possible, the vehicle's exhaust pipe shall be extended away from the confined space.

Entrants and attendants are trained in CPR and First Aid.

Training: (job title) shall identify employees assigned tasks required by this Plan and ensure that they are trained in the duties required to be performed as entrant, attendant, and entry supervisor as specified in Appendix B.

A. This training is provided:

- before the employee is assigned duties for this Plan
- whenever there is a change in his duties
- Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
- Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by paragraph (d)(3) of this section or that there are inadequacies in the employee's knowledge or use of these procedures.

B. The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section.

C, (job title) shall certify that the training required has been accomplished.

The certification shall contain:

- each employee's name,
- the signatures or initials of the trainers,
- and the dates of training.

The certifications are in Appendix C and shall be available for inspection by employees and their authorized representatives.

Air monitoring:

(1) Sampling device.

- (a) The sampling device shall be calibrated relative to the oxygen content of the ambient air at the time of sampling. Calibration of the sampling device relative to the oxygen content shall be performed where the 20.9% natural content of oxygen in the air is most likely to occur. Note: Oxygen calibration should not be performed near a confined space opening.
- (b) A sampling device which has a zero set shall be zeroed in a clean atmosphere before each sampling. Calibration of a sampling device shall be conducted as often as recommended by the manufacturer, but at least once every six months.
- (c) The sampling device or a non-sparking probe attached to the sampling device shall be used to sample the atmosphere of a confined space. When entry to a confined space is by means of a manhole, a probe shall be inserted through the pick hole of the manhole cover, or the manhole cover shall be pried open on the down wind side to allow just enough room for insertion of the probe or device.

- (2) Air monitoring. The atmosphere in a confined space within the authorized entrant's immediate area shall be continuously monitored for oxygen, hydrogen sulfide or carbon monoxide, combustible gas and any other hazardous substance which the employer has reason to believe may be present in the confined space.
- (3) Sampling shall be conducted in the following order: Oxygen, Combustible gases, then toxic atmosphere.
- (4) Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces. Observer will initial results on permit.
- (5) Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate;
- (6) Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted.
- (7) Where air monitoring results are outside the acceptable atmosphere levels entry shall not continue without either changing the atmosphere or wearing respiratory protection.
- (8) Air monitoring, pre entry and ongoing, results shall be noted on the Permit every ____ (select practical time frame, shoot for no fewer than three entries even for short entry.)

Equipment:

The following equipment and training on the equipment shall be provided prior to entry as applicable to the Space and the hazard:

- (i) Testing and monitoring equipment needed to comply with paragraph (d)(5) of this section;
- (ii) Ventilating equipment needed to obtain acceptable entry conditions;
- (iii) Communications equipment necessary for compliance with paragraphs (h)(3) and (i)(5) of this section;
- (iv) Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees;
- (v) Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency;
- (vi) Barriers and shields as required by paragraph (d)(3)(iv) of this section;
- (vii) Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;
- (viii) Rescue and emergency equipment needed to comply with paragraph (d)(9) of this section, except to the extent that the equipment is provided by rescue services; and
- (ix) Any other equipment necessary for safe entry into and rescue from permit spaces.

Rescue

(Two potential scenarios you do it or you get ____ to do it:)

Entry Rescue:

Rescue is performed by _____. Who has and been evaluated found to:

1. be able to respond in a timely manner based on the level of hazard(s) in the Space.
2. have proficiency with required rescue-related tasks and equipment.
3. function appropriately while rescuing entrants from this particular space.
4. be available at the times and for the duration of the Entry.
5. be willing to practice rescues in each type of permit required confined space ____ employees enter at least once a year.

(job title) will inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

(job title) will provide access to the confined spaces to _____ and document that they practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

Rescues shall be performed by _____(you)_

1. The personal protective equipment (PPE) needed to conduct permit space rescues safely is located _____ and maintained by (job title)
2. Affected employees are trained by (job title) so that
 - they are proficient in the use of that PPE, at no cost to those employees;
 - they are trained to perform assigned rescue duties.
 - And each has successfully completed the training required to establish proficiency as an authorized entrant;
3. Affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

Non entry Rescue:

1. Retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements.
2. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.
3. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep

Permit System: Before entry is authorized a permit shall be developed itemizing the procedures and practices, including rescue, necessary for safe entry identified in Appendix A for that space.

A. Entry permit. The entry permit that documents compliance with this section and authorizes entry to a permit space shall identify:

- (1) The permit space to be entered;
- (2) The purpose of the entry;

- (3) The date and the authorized duration of the entry permit;
 - (4) The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;
 - (5) The personnel, by name, currently serving as attendants;
 - (6) The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;
 - (7) The hazards of the permit space to be entered, **identified in Appendix A** and the pre entry assessment of the space;
 - (8) The measures from Appendix A used to isolate the permit space and to eliminate or control permit space hazards before entry; such as lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.
 - (9) The acceptable entry conditions;
 - (10) The results and times of initial and periodic tests performed and the names or initials of the testers and initials of entrant observer;
 - (11) The rescue and emergency:
 - a. Non entry equipment set up and harness donned and attached.
 - b. Onsite entry rescue names and verification that they are present and equipped.
 - c. Offsite rescue communication procedures and verification that they have been notified that entry is proceeding.
 - d. Verification that the off site rescue service has one person who is assigned the task to call if they cannot perform the rescue.
 - (12) The communication procedures used by authorized entrants and attendants to maintain contact during the entry;
 - (13) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this section;
 - (14) Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety; and (15) Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.
- B. Permit implementation:**
- (1) Before entry begins, the entry supervisor identified on the permit shall verify that the permit is correctly and completely filled and sign the entry permit to authorize entry.
 - (2) The completed permit shall be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.
 - (3) The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
 - (4) The entry supervisor shall terminate entry and cancel the entry permit when:
 - (i) The entry operations covered by the entry permit have been completed; or
 - (ii) A condition that is not allowed under the entry permit arises in or near the permit space.
 - (5) The employer shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program required by paragraph (d)(14) of this section. 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.

Appendix A Specific Safe Permit Space Entry Procedures

First, list your spaces and follow the procedures below for each space:

A. Identify the specific hazards for that space:

- Hazardous atmosphere
- Chemicals within the space and from processes and chemicals required by tasks conducted in the space that create hazards other than atmospheric
- Electrical hazards
- Configuration hazards
 - As they relate to entrapment
 - As they relate to rescue non entry retrieval
 - As they relate to entry rescue retrieval
- Engulfment hazards
 - Solid, fine material
 - Liquid
 - From pipes
 - From material in space
- Mechanical hazards
 - Unguarded fan blades, pinch points etc.
 - Sharp surfaces
 - Etc.

Include hazards created by employee activity in or near the space.

"Hot work permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

B. Identify methods and equipment to control those hazards leaving PPE to a last resort:

Hazard Control:

Ventilation Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.

Elimination: If flushing the space with fresh air is sufficient to remove atmospheric hazards and the source of the contamination is either controlled or takes a long time (oxygen deficiency due to decomposition) then once the atmosphere reaches acceptable conditions the space can be temporarily reclassified as non permit. This includes evaporating volatile chemicals.

Control: If atmospheric conditions are the only hazard and acceptable entry conditions can be obtained by ventilation then the space can be entered using Alternate entry procedures and documentation.

Isolation means the process by which a permit space is protected against the release of energy and material into the space by such means as:

- blanking or blinding;
- misaligning or removing sections of lines, pipes, or ducts;
- a double block and bleed system;
- lockout or tagout of all sources of energy;
- blocking or disconnecting all mechanical linkages.

"Double block and bleed" means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

"Blanking or blinding" means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that

is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

"Line breaking" means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Chemical hazards other than atmospheric from two sources: in the space or brought into the space.

For hazards within the space that are left over after the isolation process or after the container is emptied as completely as possible find a way to reduce or mitigate the hazard:

Can it be neutralized or otherwise reduce the hazard?

For hazards brought into the space by work processes or equipment, such as cleaning chemicals:

- Ensure any chemical brought in will not react with chemicals in the space or other chemicals brought in to create an additional hazard.
- Ensure that any chemical brought in has an MSDS on site for training, safe work practices and provision to rescue services and medical professionals.
- Is there an alternative chemical with no or lower hazards available.
- Develop work processes that utilize the least amount of the chemical and for the briefest period of use possible.

C. Document the hazard and control methods into a checklist format that can be attached to the generic entry permit.

D. Identify engineering controls, safe work practices and PPE sufficient to reduce or eliminate the hazard.

(Attach the assessments and procedures behind this cover instruction.)

Appendix B

Duties of authorized entrants. The employer shall ensure that all authorized entrants:

- (1) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (2) Properly use equipment as required by paragraph (d)(4) of this section;
- (3) Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by paragraph (i)(6) of this section;
- (4) Alert the attendant whenever:
 - (i) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - (ii) The entrant detects a prohibited condition; and
- (5) Exit from the permit space as quickly as possible whenever:
 - (i) An order to evacuate is given by the attendant or the entry supervisor,
 - (ii) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
 - (iii) The entrant detects a prohibited condition, or
 - (iv) An evacuation alarm is activated.

Duties of attendants:

- (1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (2) Is aware of possible behavioral effects of hazard exposure in authorized entrants;
- (3) Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under paragraph (f)(4) of this section accurately identifies who is in the permit space;
- (4) Remains outside the permit space during entry operations until relieved by another attendant;
- (5) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under paragraph (i)(6) of this section;
- (6) Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - (i) If the attendant detects a prohibited condition;
 - (ii) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
 - (iii) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
 - (iv) If the attendant cannot effectively and safely perform all the duties required under paragraph (i) of this section;
- (7) Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;
- (8) Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - (i) Warn the unauthorized persons that they must stay away from the permit space;
 - (ii) Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and
 - (iii) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;
- (9) Performs non-entry rescues as specified by the employer's rescue procedure; and
- (10) Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of entry supervisors.

- (1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (2) Verifies, by checking 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;
- (3) Terminates the entry and cancels the permit as required by paragraph (e)(5) of this section;
- (4) Verifies that rescue services are available and that the means for summoning them are operable;
- (5) Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and
- (6) Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

