

San Juan College Environmental health Farmington, New Mexico

Confined Spaces

Objectives:

- Describe the requirements of the permit required confined space standard
- State the hazards that may be present in confined spaces.
- Identify the difference between a confined space and a permit required confined space.
- State the conditions that must be present to reclassify a permit required confined space to a confined space.
- Explain the requirements for putting together a permit required confined space program.

OSHA 29 CFR 1910.146 PERMIT REQUIRED CONFINED SPACE

The standard is called a performance standard, which allows the employer some flexibility in methods used to comply.

General Requirements

San Juan College will inform employees in the workplace of permit spaces, by posting danger signs or other equally effective means of the existence and location of and the dangers posed by existing permit spaces.

The requirement for a sign would read as **DANGER-PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER**, also this could be

written in any other language that might assist persons speaking and reading Spanish, (which is s language spoken in the college environment). This sign would satisfy OSHA requirements for a sign.

San Juan College is responsible for defining what spaces that its employees will not enter confined spaces, and shall take effective measures to prevent employees from enter these permit spaces.

If San Juan College decides that its employees will enter permit spaces, San Juan College will develop and implement a written permit-space program that complies with this section. Written programs will be available for inspection by employees and their authorized representatives

San Juan College will provide employees who enter a permit space information when they do not need to comply with certain sections of the standard (alternate procedures) only when certain conditions are met. This can only be done when San Juan College demonstrates that the only hazard posed by the permit space is an actual or potential hazardous atmosphere; the college must demonstrate that continuous forced air ventilation alone is sufficient to maintain safe entry of permit space; must monitor employees and monitor the space atmosphere; must provide inspection data pertaining to the contained space available to the employee; and must assure that permit entry program is implemented when entry is required to reclassify the space from a permit required confining space to a confined space. San Juan College understands the conditions that pertain to alternative procedures by referencing the requirements in the standard defined by OSHA.

Entrance cover shall be eliminated before the cover is removed when a condition makes it unsafe for removal.

In the case that an entrance cover is removed, a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will provide protection for each employee working in the space from foreign objects shall promptly guard the opening entering the space.

When entering the space an employee must make sure that the internal atmosphere has been tested with a calibrated direct reading instrument for oxygen content, flammable gases and vapors, and any other potentially toxic air contaminants.

Whenever any employee is inside the space there may be no hazardous atmosphere within the space.

Forced, continuous air ventilation shall be used as follows:

- Forced air ventilation must be provided eliminating any hazardous atmosphere before an employee may enter the space.
- Forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- Air supply for the forced air ventilation shall be from a clean source and may not increase the spaces hazards.
- Atmosphere within the space will be periodically tested as necessary to ensure continuous forced air ventilation is not allowing the accumulation of a hazardous atmosphere.
- If or when a hazardous atmosphere is detected during entry, the employee must leave the space immediately; the space must be evaluated to determine how the hazardous atmosphere developed, and measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

San Juan College shall verify that the space is safe for entry and that the pre-entry procedures of this topic have been taken, using a written certificate that contains the date, the location of the space, and the signature of the person providing the certification. Certification shall be made before entry and will be made available to every employee entering the space.

When changes in the use or configuration of a non-permit confined space that increases the hazards to entrants, the employer shall re-evaluate the space and, if necessary, reclassify it, as a permit required confined space.

Permit required confined space may be reclassified as a non-permit confined space that might increase the hazards to entrants, the employer shall re-evaluate the space and, reclassify it as a permit required confined space if necessary. If in order to enter the space to eliminate such hazards

The reclassification of a permit required confined space might be done only if the following procedure is followed. The permit space poses no actual or potential atmospheric hazards and if within the space all hazards are eliminated without entry into the space, reclassification of the permit space may be done for as long as the non-atmospheric hazards remain eliminated;

also, if it is section. If it is necessary to enter the space for the elimination of such hazards, such entry will be performed in accordance with the exact proper procedures of this section.

San Juan College will document the basis for determining when and that all hazards in a permit space have been eliminated through a contains the date, the location of the space and the signature of the person or persons making the decision.

Each employee in the space shall exit the space if hazards arise within a permit space that was declassified to a non-permit space. San Juan College shall then determine and re-evaluate the space and determine if it should be reclassified.

When San Juan College arranges to have employees of another employer to perform contract work that involves space entry, San Juan College shall:

- Apprise the contractor of the hazards identified and the San Juan College's experience with the space that make the space in question a permit space.
- Apprise the contractor of any precautions or procedures that the San Juan College has implemented.
- Contractors must coordinate entry operations with San Juan College.
- Review and debrief contractors of the conclusion of the entry operations regarding the permit space.

Each contractor shall in addition to complying with the permit space requirements that apply to San Juan College will:

- Obtain from San Juan College any available information regarding permit space hazards and entry operations.
- Contractor will coordinated entry operations with San Juan College.
- Inform San Juan College of the permit space program that the contractor will follow and provide information to any hazards confronted or created.

Permit Required Confined Space Program

San Juan College shall under the permit required confined space program

- Implement the measures necessary to prevent unauthorized entry.
- Identify and evaluate the hazards before employees enter them.
- Develop and Implement the means, procedures, and practices necessary for safe permit space entry operations (which include also specifying) acceptable entry conditions, isolating the permit space, purging, inerting, flushing, or ventilating the permit space providing pedestrian and vehicular barriers, and verifying that conditions in the permit space are acceptable).
- Provide testing and monitoring equipment.
- Provide ventilation equipment.
- Provide communications equipment.
- Provide personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.
- Provide lighting equipment needed to enable employees to see well enough to do their work and to exit the space quickly in an emergency.
- Provide barriers and shields.
- Provide equipment for safe ingress and egress by authorized entrants.
- Provide rescue equipment and any other equipment necessary for safe entry and rescue.

Permit space conditions will be evaluated as follows when entry operations are conducted:

- Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized.
- Test or monitor the permit space to determine if acceptable entry conditions are being maintained.
- When testing for atmospheric conditions, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

To authorize entry for the duration of entry operations at least one attendant must be outside the permit space into which entry is authorized.

In the case of multiple spaces being monitored by a single attendant, allow in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without interruption or distraction from the attendant's responsibilities.

Persons who are authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in the permit space should be designated to identify the duties of each employee.

For the preparation, issuance, use, and cancellation of entry permits develop and implement a system.

When employees of more than one employer are working simultaneously as authorized entrants develop and implement procedures to coordinate entry operations.

Procedures for concluding the entry should be developed and implemented.

When the employer has reason to believe that, the measures taken under the permit space program may not protect employees and revise the program review the entry operations.

Revise the program to ensure safe entry operations within one year after each entry, by reviewing the permit space program using cancelled permits.

Permit System

San Juan College will document the completion of measures required in this section by preparing an entry permit before entry is authorized.

San Juan College representative shall sign the permit to authorize entry before entry begins.

The permit shall be posted at the entry portal or by any other equally effective means.

The duration of the permit shall not exceed the time required to complete the work.

Entry supervisor shall terminate entry and cancel the permit when the entry operations covered by the entry permit have been completed or a condition that is not allowed under the entry permit arises in or near the space.

Cancelled permits shall be retained for at least one year.

Entry Permit

OSHA requires that entry permits shall identify the permit space to be entered; the purpose of the entry; the date and the authorized duration of the entry permit; the authorized entrants within the permit space by name; the personnel, by name, currently serving as attendants; the individual, by name, currently serving as entry supervisor; the hazards of the permit space to be entered; the measures used to isolate emergency services that can be summoned; the communication procedures used by authorized entrants and attendants to maintain contact; personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment to be provided; and any other information whose inclusion is necessary; and any additional permits, such as hot work, that have been issued.

Training

San Juan College shall provide training 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 under this section.

Training is mandatory, and must be provided for each employee before the employee is assigned duties under this section; Changes in assigned duties of an employee under this section; before there is a change in permit space operations that presents a hazard about which the employee has not been trained; and whenever there are deviations and or changes off the permit space entry procedures.

Training will establish employee proficiency in all required duties.

San Juan College shall certify that all the training has been accomplished. Certification shall contain the employee's name, the signatures and or initials of trainers, and the dates of training.

Duties of Authorized Entrants

San Juan College shall ensure that all authorized entrants do the following according to OSHA guidelines:

- Know the hazards that may be faced during entry, including information on the mode, signs, or symptoms, and consequences of the exposure.
- Properly use equipment.
- Communicate with the attendant
- Alert the attendant whenever the entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or the entrant detects a prohibited condition.
- Exit from the space as quickly as possible whenever an order to evacuate is given by the attendant or entry supervisor, the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, the entrant detects a prohibited condition, or an evacuation alarm is activated.

Duties of Attendants

San Juan College shall ensure that each attendant does the following according to OSHA guidelines:

- Know the hazards that may be faced during entry.
- Is aware of possible behavioral effects of the hazard exposure in authorized entrants.
- Continuously maintains an accurate account of authorized entrants.
- Accurately identifies who is in the space.
- Remains outside the space until relieved by another attendant.
- Communicates with authorized entrants to maintain entrant status.
- Monitors activities inside and outside the space until relieved by another attendant.
- Communicates with authorized entrants can remain in the space and orders the authorized entrants to evacuate the permit space immediately if the attendant detects a prohibited condition, if the attendant detects behavioral effects of a hazard in the entrant, if the attendant detects a situation outside the space that could endanger the

- entrant, or if the attendant cannot effectively communicate with the entrant.
- Summons rescue and emergency services as soon as the attendant determines that entrants may need assistance to escape from the space hazard.
 - Takes the following action when unauthorized persons enter the permit space;
 1. Warns unauthorized persons that they must stay away.
 2. Advises unauthorized persons that they must exit the space immediately, if they have entered.
 3. Informs authorized entrants that unauthorized persons have entered the space.
 4. Performs non-entry rescues as specified by the employer's rescue procedures, and performs no duties that might interfere with the attendant's primary duties.

Duties of Entry Supervisor

San Juan College shall assure that each entry supervisor does the following according to OSHA guidelines:

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.
- Verifies by checking that the appropriate entries have been conducted, and that all procedures and equipment specified are in place.
- Terminates the entry and cancels the permit as required.
- Verifies that rescue services are available.
- Removes unauthorized individuals who enter or attempt to enter a permit space.
- Determines, whenever responsibility for a permit space operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with the terms of the entry permit and that all acceptable entry conditions are maintained.

Rescue and Emergency Services

Employers who designate rescue and emergency services according to OSHA guidelines shall:

- Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazards identified.
- Evaluate a prospective service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit spaces identified.
- Select a rescue team or service from those evaluated that has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified and is equipped for and proficient in performing the needed rescue at the site.
- 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 operations.

San Juan College whose employees have been designated to provide permit space rescue and emergency services shall take the following measures: personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees so that they are proficient in the use of PPE, at no cost to the employee, these will be provided for the employee by the employer. The employer must ensure that employees successfully complete the training required to establish proficiency as an authorized entrant, as provided in the standard; train employees in 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 ensure that affected employees practice making permit space rescue every twelve months, by means of simulated rescue from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the type of permit spaces from which rescue is to be performed.

In order to facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the equipment would add to the hazard.

According to OSHA: All authorized entrants 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 that 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 not feasible or creates a greater hazard and the use of wristlets is the safest and most effective alternative.

The retrieval line shall be attached to a mechanical device (hoist apparatus) 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. Available to retrieve personnel from vertical-type permit spaces more than 5 feet deep, a mechanical device shall be available.

Alternatively, 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 deep.

A Material Safety Data Sheet (MSDS) or other similar information is required to be kept at the worksite, the MSDS or written information shall be made available to the medical facility treating the exposed entrant in the case that an injured entrant is exposed to a substance in the non-entry confined space.

Commonly Found Gases in Confined Spaces:

Many gases and vapors may be found depending upon the type of space and its location. Most commonly found are carbon monoxide, carbon dioxide, hydrogen sulfide, and methane.

Definitions

Acceptable entry conditions. Acceptable entry conditions are those conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit required confined space entry could safely enter into and work within the space.

Attendant. Attendant is an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized entrant. Authorized entrant is an employee who is authorized by the employer to enter a permit space.

Blanking or binding. Blanking or binding is 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 any pipe, line, or duct with no leakage beyond the plate.

Confined Spaces (CS). A confined space is large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit, (e.g., tanks, vessel, silos, storage bins, hopper, vaults, and pits); and is not designed for continuous employee occupancy.

Double block and bleed. Double block and bleed is the closing 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.

Entry. Entry is the action by which a person passes through an opening into a permit required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit. Entry permit is the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in this section.

Entry supervisor. Entry supervisor is the person (such as the employer, foreman, or crew chief) 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 as required by this section. An entry supervisor may also serve as an attendant, or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

Hazardous atmosphere. A hazardous atmosphere is one that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL); airborne combustible dust at a concentration that meets or exceeds its LFL; atmospheric oxygen concentration below 19.5 percent (oxygen deficient) or above 23.5 percent (oxygen enriched); atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in ODHA standards subpart G or Z and that could result in employee exposure in excess of its dose or permissible exposure limit; and any other atmospheric condition that is immediately dangerous to life and health.

Hot work permit. A hot work permit is the employer has written authorization to perform operations (e.g., riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately dangerous to life or health (IDLH). IDLH means any condition that poses an immediate threat or delayed threat to life, that would cause irreversible adverse effects, or that would interfere with an individual's ability to escape unaided from a permit space.

Non-permit confined space. A non-permit confined space is a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical injury.

Permit required confined space (PRCS). A PRCS is a confined space that contains or has the potential to contain a hazardous atmosphere; contains a material that has the potential for engulfing the entrant; has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; contains any other recognized serious safety or health hazard,'

Permit required confined space program. A permit required confined space program refers to the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit system. A permit system is the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition. A prohibited conditions any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service. Rescue service is the personnel designated to rescue employees from permit spaces.

Retrieval system. Retrieval system means the equipment (including retrieval line, chest or full body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing. Testing is the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.