

**SUNY OSWEGO FACILITIES SERVICES
ENVIRONMENTAL HEALTH & SAFETY**

CONFINED SPACE PROGRAM

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EHS-CS-01		

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1.0 POLICY

It shall be the policy of SUNY Oswego to adhere to all regulatory statutes with regard to confined spaces. Confined spaces are, and have been by their nature, a source of injuries and fatalities to workers and rescuers. With proper planning and adherence to a confined space entry program, these hazards to employees can be minimized.

This Confined Space Entry Program is designed to provide safe procedures and practices for SUNY Oswego and contractor personnel for entering, exiting and working in confined spaces. This program has been developed, following the principles and guidelines required by OSHA 29 CFR 1910.146, Permit-required Confined Spaces, the guidelines recommended by ANSI Z117.1-1989, American National Standard, Safety Requirements for Confined Spaces and 29 CFR 1910.268 Telecommunications standard. Other applicable regulations contained in 29 CFR 1910 and 1926 will be followed.

This Confined Space Entry Program will be reviewed at least annually by the Occupational Safety and Training Coordinator. Any revisions made to this program will be incorporated into the program and distributed to the appropriate personnel.

All persons entering a confined space shall adhere to the conditions set forth in this program.

2.0 RESPONSIBILITIES

2.1 President

The College President is ultimately responsible for health and safety on campus. The President must ensure that adequate funds and resources are made available to comply with this Confined Space Entry Program. Also, the President must provide the authority for all procedures to be carried out.

2.2 Vice President for Finance and Budget

The VP for Finance and Budget must ensure that adequate funds are distributed to the appropriate budgets for the implementation and maintenance of this program.

2.3 Department Heads

Department Heads with operations under their supervision requiring confined space activities shall ensure that the procedures in this Confined Space Entry Program are followed and that provisions for safety equipment and employee training are made available.

2.4 Supervisors

Supervisors shall be responsible for ensuring their employees do not enter any confined space without following the appropriate procedures specified in this program. Supervisors shall also be responsible for pre-planning of confined space activities, gathering of appropriate safety equipment, ensuring that all affected employees are qualified, and coordinating confined space activities with outside contractors.

Supervisors shall be responsible to ensure employees they assign to work in or near a confined space have been trained.

2.5 Employees

Employees are responsible for following the procedures of this Confined Space Entry Program, attending training sessions, and avoiding unauthorized entrance to any confined space identified in the Confined Space Entry Program.

2.6 Occupational Safety and Training Coordinator

The Occupational Safety and Training Coordinator is responsible for coordinating, reviewing and revising the Confined Space Entry Program as needed, evaluating confined spaces, recommending appropriate safe entry procedures and personal protective equipment, ensuring proper training, and the calibration of air monitoring equipment for atmospheric testing.

The program and cancelled permits will be reviewed at least annually. Changes and updates to the program may be made whenever necessary if circumstances arise that would warrant a change is needed to further protect the safety of SUNY Oswego staff.

2.7 Outside Contractor(s) – An updated standard for Confined Spaces in Construction has been published.

Contractors shall be responsible for adhering to applicable confined space regulations found in 29 CFR 1926 Subpart AA or 29 CFR 1910.146. The 1926 regulations will apply for construction related entries and the 1910 regulations will apply for maintenance related entries.

If the work falls within the parameters of the 1910.146 Contractors shall be responsible to follow our program if they do not have a confined space policy of their own.

The Contractor will meet with the Occupational Safety and Training Coordinator to review:

- The Confined Space Program
- Discuss any hazards of entry likely to be present
- Training Records to ensure Contractors Employees have been trained
- Review Rescue Procedures/Plans
- Review Permit to be utilized if applicable
- Coordinating any confined space activities with appropriate SUNY Oswego personnel.

If the work falls within the parameters of 29 CFR 1926 **SUNY Oswego will be considered the Host Employer** and the Contractor will be responsible to follow all rules and regulations found in 29 CFR 1926 Subpart AA.

Host employer means the employer that owns or manages the property where the construction work is taking place.

Note to the definition of "Host employer". If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, and has transferred to **that entity the information specified in § 1926.1203(h)(1), OSHA will treat the contracted management entity** as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case will there be more than one host employer. For example, SUNY Oswego transfers host employer would be when a project is being overseen by DASNY or SUCF.

Before entry operations begin, **SUNY Oswego (host employer)** will provide the following information, if it has it, to the **controlling contractor**:

The location of each known permit space;

The hazards or potential hazards in each space and/or the reason it is a permit space;

Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space.

Before entry operations begin, the **controlling contractor** will obtain the **host employer's** information about the permit space hazards and previous entry operations; and provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:

The information received from the host employer;

Any additional information the controlling contractor has about the hazards or potential hazards in each space or the reason it is a permit space

The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of employees in the permit spaces.

Before entry operations begin, each **entry employer will**:

Obtain all of the controlling contractors' information regarding permit space hazards and entry operations;

Inform the controlling contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.

The **controlling contractor and entry employer(s)** must coordinate entry operations when:

More than one entity performs permit space entry at the same time; or

Permit space entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed.

After entry operations:

The controlling contractor will debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s) during entry operations;

The entry employer will inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during entry operations;

The controlling contractor will apprise the host employer of the information exchanged with the entry entities.

Unless a host employer or controlling contractor has or will have employees in a confined space, it is not required to enter any confined space to collect the information.

If there is no controlling contractor present at the worksite, the requirements for, and role of, controlling contractors will be fulfilled by the host employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

3.0 DEFINITIONS as per 29CFR1910.146 there will be some variation to definitions under 29CFR1926

Acceptable Entry Conditions: The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into, and work within the space.

Attendant: A person who is assigned as standby to monitor a confined space process or operation and provide support or react as appropriate.

Authorized Entrant: An employee or contractor employee authorized by SUNY Oswego to enter a permit space.

Blanking or Blinding: The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or 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.

Confined Space: An enclosed area having all of the following characteristics:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means for enter or exit (i.e. tanks, boilers, pits, bins, sumps, sewers, manholes, etc.)
3. Is not designed for continuous human occupancy.

Double Block and Bleed: The closure of a line, duct, or pipe by closing and locking or tagging 2 inline valves and by opening and locking or tagging a drain or vent valve in the line between the 2 closed valves.

Engulfment: The surrounding, capturing, or both, of a person by divided particulate matter or liquid.

Entry: Ingress by persons into a confined space which occurs upon breaking the plane of the confined space portal with any body part; and all periods of time in which the confined space is occupied.

Entry Coordinator/Supervisor: The person responsible for determining if acceptable entry conditions exist for entry into a confined space, for authorizing entry and overseeing entry operations, and for terminating entry. This is equivalent to the OSHA term "**Entry Supervisor.**"

Hazardous Atmosphere: An atmosphere that may be, or is injurious to occupants by reason of: oxygen deficiency, or enrichment; flammability or explosivity, or toxicity.

Hot Work: Work within a confined space that produces arcs, sparks, flames, heat, or other sources of ignition.

Immediately Dangerous to Life and Health (IDLH): Any condition that poses an immediate or delayed threat to life, or that would cause irreversible adverse health effect or that would interfere with an individual's ability to escape unaided from a permit space.

Inerting: The displacement of the atmosphere in a permit space by a noncombustible gas (such as Nitrogen) to such an extent that the resulting atmosphere is noncombustible.

CAUTION: This procedure produces an Immediately Dangerous to Life and Health oxygen-deficient atmosphere.

Isolation: The process in where a permit space is removed from service and completely 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; or blocking or disconnecting all mechanical linkages.

Line Breaking: 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.

Non-Permit Confined Space (Non-Permit Space): 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 harm.

Oxygen Deficient Atmosphere: An atmosphere containing less than 19.5% oxygen by volume.

Oxygen Enriched Atmosphere: An atmosphere containing more than 23.5% oxygen by volume.

Permit-Required Confined Space (Permit Space): A confined space that has one or more of the following characteristics:

1. Contains or has the potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
4. Contains any other recognized serious safety/health hazard.

Permit System: The written procedure for preparing and issuing permits for entry and for returning the permit to service following termination of entry.

Prohibited Condition: Any condition in a permit space that is not allowed by the permit during the period when the entry is authorized.

Rescue Service: The personnel designated to rescue employee from permit spaces.

Retrieval System: The equipment (including a 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: The process by which the hazards that may confront entrant of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

4.0 IDENTIFICATION AND EVALUATION OF CONFINED SPACE

All confined spaces known to be on campus have been identified and are listed in Appendix A "Confined Space Inventory." Each space has also been evaluated for existing and potential physical and health hazards, control measures necessary for safe entry, safety equipment needed, and procedures necessary prior to entry. Each space is classified as either a Permit Space or a Non-Permit Space. These evaluations are available at the EHS office and may be viewed upon request, it is strongly suggested that they be viewed when the Occupational Safety and Training Coordinator is available to answer any questions that may arise.

Prior to any work involving a confined space, a Job Hazard Analysis will be conducted (or reviewed if one already exists). It will be reviewed by all interested parties including but not limited to the Entry Supervisor, Entrant, Attendant and any Rescue personnel. This will help to ensure that appropriate actions are taken to eliminate hazards, appropriate equipment is assembled and is in good working order, and that each person is familiar with the potential hazards and proper actions to take in the event of an emergency. The Confined Space Entry/Evaluation Procedure sheets that were used to classify the spaces can be used as a base starting point, these evaluations are located in EHS. The Occupational Safety and Training

Coordinator will be contacted whenever any questions arise from this review or, if a particular activity to be performed in the space poses a hazard not covered in the evaluation sheets.

Any employee identifying an additional space they believe meets the criteria of a confined space must not enter the suspected confined space and must immediately notify their supervisor. The supervisor will then notify the Environmental Health and Safety Department for evaluation.

5.0 PREVENTING UNAUTHORIZED ENTRY

No individual will be permitted to enter a confined space unless specifically authorized to do so in accordance with this Confined Space Entry Program. Entrance into a **Permit Space** will only be allowed after the Entry Coordinator has completed, signed and posted a Confined Space Entry Permit and procedures in Sections 7.0 and 8.0 are followed or, the Permit Space is reclassified according to section 10.0 or, alternative procedures are used in accordance with section 9.0.

Any unauthorized entry into a confined space shall be investigated by the appropriate supervisor to determine corrective actions necessary to prevent future unauthorized entries.

Permit spaces that meet the definition of a Permit Required Confined Space provided in 29CFR1910.146 have been posted with signs reading "**DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER**" or of other similar language and/or potentially affected employees have been advised of their existence. In addition locks, barriers and permanent structures will be used as necessary to prevent unauthorized entry.

6.0 PERSONNEL

6.1 Authorized Entrant

The authorized Entrant is the individual who is authorized by the College to enter a permit space. The Authorized Entrant must:

- A. Know the hazards that may be faced during entry, including the mode, signs, or symptoms, and consequences of any exposure.
- B. Properly use equipment associated with the entry (e.g. gas monitor and protective equipment).
- C. Communicate with the Attendant as necessary to enable the Attendant to monitor Entrant status and to enable the Attendant to alert the Entrant(s) of the need to evacuate.
- D. Alert the Attendant whenever:
 1. The Entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 2. The Entrant detects a prohibited condition.

- E. Exit from the permit space as quickly as possible whenever:
 - 1. An order to evacuate is given by the Attendant or Entry Supervisor.
 - 2. The Entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - 3. The Entrant detects a prohibited condition.
 - 4. An evacuation alarm is activated.

6.2 Attendant

The Attendant is the individual stationed outside the permit space who monitors the Authorized Entrant(s) and who perform all Attendant's duties. The attendant must:

- A. Know the hazards that may be faced during entry, including the mode, signs of symptoms, and consequences of the exposure.
- B. Be aware of possible behavioral effects of hazard exposure in Authorized Entrant(s).
- C. Continuously maintain an accurate count of Authorized Entrant(s) in the permit space.
- D. Remain outside the permit space during entry operations until relieved by another Attendant; under no circumstances is the Attendant to enter the space or leave the space unattended with entrant inside.
- E. Communicate with Authorized Entrant(s) as necessary to monitor Entrant status and to alert Entrant(s) of the need to evacuate the space in an emergency.
- F. Monitor activities inside and outside the space to determine if it is safe for Entrant(s) to remain in the space and orders the authorized Entrant(s) to evacuate the permit space immediately if the Attendant:
 - 1. Detects a prohibited condition.
 - 2. Detects the behavioral effect of hazard exposure in an Authorized Entrant.
 - 3. Detects a situation outside the space that could endanger the Authorized Entrant(s).
 - 4. Cannot effectively and safely perform his duties.
- G. Summon rescue and other emergency services as soon as the Attendant determines that Authorized Entrant(s) may need assistance.
- H. Take the following actions when unauthorized persons approach or enter a permit space while entry is underway: warn the unauthorized persons that they must stay away from the permit space; advise the unauthorized persons that they must exit immediately if they have entered the permit space; inform the Authorized Entrant(s) and the Entry Supervisor if unauthorized persons have entered the permit space.

- I. Perform non-entry rescues if necessary.
- J. Performs no duties that might interfere with the Attendant's primary duty to monitor and protect the Authorized Entrant(s).

6.3 Entry Supervisor

The Entry Supervisor is the person 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 also may 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). The Entry Supervisor must:

- A. Inform the Environmental Health and Safety Department when an entry is going to take place.
- B. Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- C. Perform initial and periodic air sampling from the exterior of the space, and ensure at least one entrant is wearing an air monitor at all times.
- D. Verify, 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. If Alternative Procedures or Reclassification is used for entry, all procedures are followed.
- E. Terminate the entry and cancel the permit whenever a condition that is not allowed under the entry permit arises in or near the permit space.
- F. Verify that the means for summoning rescue services is operable.
- G. Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations. Summon University Police if unauthorized individuals refuse to leave.

7.0 **ENTRY PERMIT SYSTEM**

SUNY Oswego requires an entry permit to be completed for all confined space entries including spaces that are not classified by definition as a Permit Require Confined Space, as well as spaces that have been reclassified by the removal/elimination of hazards.

Prior to entry into a confined space, the Entry Supervisor identified on the permit shall sign the entry permit to authorize entry. In cases where it is necessary for multiple entries per shift into the same space the Entry Supervisor will review, update and initial the updated permit prior to each entry.

The completed permit shall be made available at the time of entry to all Authorized Entrants, by posting the permit at the entry portal or by any other equally effective means; so that the Entrant(s) can confirm that pre-entry preparations have been completed.

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit. If the job last for more than one work shift a new permit will be issued. The permit is valid for one continuous entry only. Therefore, after any extended breaks such as lunch pre-entry procedures must be repeated and the permit reissued.

The permit is valid for one job and one space only and will expire at the end of the work shift. If multiple entries are needed such as the job is interrupted by break periods, the existing permit will be reviewed and updated to include any changes in the conditions, new air monitoring data and any additional information as needed. The Entry Supervisor will note the time of the re-evaluation and initial the permit.

The Entry Supervisor shall terminate and cancel the entry permit when:

- (i) The entry operations covered by the entry permit have been completed.
- (ii) A condition that is not allowed under the entry permit arises in or near the permit space.

The canceled permit will be copied and distributed, within 24 hours, as follows:

- (i) Original to Environmental Health and Safety.
- (ii) Copy to the Supervisor of the Entry Supervisor.

These copies will be retained for at least one year to facilitate the annual review of the permit-required confined space program.

8.0 ENTRY PROCEDURE

8.1 Pre-Planning

Notification of planned entry will be given to the Environmental Health and Safety Department.

Prior to entering a Permit Required Confined Space that cannot be reclassified by the removal of hazards, and the use of Non-Entry Rescue Equipment is infeasible the Entry Supervisor/Entry Supervisor shall ensure that rescue personnel are available. SUNY Oswego Physical Plant Director will choose contracted rescue services based on the work required to be performed in the space as well as the availability of rescue team.

The Entry Supervisor will make sure that all necessary equipment is assembled, inspected and in good working condition. Also, the Entry Supervisor must insure that all personnel to be associated with the permit space entry are trained and qualified for their particular roll in the entry.

8.2 Permit

The Entry Supervisor should initiate the permit.
A permit is still required for reclassified spaces.

8.3 Personnel

Each permit space entry must have at least one of each:

- Entry Supervisor
- Attendant
- Authorized Entrant

The Entry Supervisor may also be the Attendant or an Authorized Entrant. Personnel must be identified on the permit. An Attendant must be on duty whenever anyone is in the permit space. All individuals involved in a confined space entry must have completed adequate training to function in his/her capacity.

8.4 Surveillance

The area surrounding the space will be surveyed to avoid hazards such as drifting vapors from tanks or other sources of hazardous materials, vehicle exhaust, inclement weather, or traffic.

8.5 Hazard Identification and Control

Potential hazards within and outside the confined space must be identified and recorded on the permit. Prior to entry all recognized hazards must be abated. Such information must be recorded on the permit.

Whenever practical, the space should be isolated. Isolated means the 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; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages. When the space is not isolated prior to entry, the Entry Supervisor must make note of the non-abated hazards on the entry permit.

Hot work is not permitted in any confined space (permit or non-permit) without the consent of the SUNY Oswego Fire Marshal or the Occupational Safety and Training Coordinator if the Fire Marshal is unavailable. In such instances the SUNY Oswego Hot Work Program/Procedure will be followed. A copy of the Hot Work Permit will be located at the entry site at all times and will be turned in with the Entry Permit. Under no circumstances will the Entry Supervisor allow Hot Work to be conducted without a Hot Work Permit issued by the appropriate EHS staff. In the event of an emergency the Fire Marshal or the Occupational Safety and Training Coordinator shall be contacted by phone and the permit will be filled out and sent via email that indicates permission has been authorized.

8.6 Space Ventilation

When mechanical ventilation systems are used, they will be set at 100% outside air.

When possible, additional manholes or openings will be opened to increase air circulation. Portable blowers may be needed to augment natural circulation.

If initial air monitoring readings do not show acceptable conditions, continue ventilation and repeat testing. Entry will not begin until testing has demonstrated that the hazardous atmosphere has been eliminated. If atmospheric testing continues to show unacceptable conditions the Entry Supervisor must notify the Occupational Safety and Training Coordinator of the Director of the Physical Plant or designee.

8.7 Testing

8.7.1 General

Appendix D of this program contains instructions for using the confined space monitors available at the campus. Testing must be made according to these instructions.

The confined space atmosphere shall be tested to determine whether dangerous air contaminants and/or oxygen deficiency exists with a direct reading gas monitor.

Testing shall be performed by the Entry Supervisor who has been trained in the use of the gas monitor(s) to be used. Initial monitoring of the space will be conducted using remote sampling from the exterior of the space. Testing should be conducted at several levels to test for stratified hazardous atmospheres, a minimum of 3 levels will be tested to include a sample from the lowest level of the space, the middle of the space and the top of the space. In spaces that are greater than 8', samples will be taken at least every 4'. Upon space clearance for entry the space will be continually monitored. The Entry Supervisor will ensure that at least one entrant will wear a monitor in the space. Periodic monitoring will take place from the exterior of the space and results will be documented on the permit at least every hour of an entry.

8.7.2 Acceptable Conditions

The minimum acceptable atmospheric conditions for entry are:

- Oxygen above 19.5% and below 23.5%
- Flammability less than 10% of the gasses lower explosive limit (LEL)
- Hydrogen Sulfide below 10 ppm
- Carbon Monoxide less than 35 ppm

Testing for additional contaminants may be required to prevent entry into a hazardous atmosphere. The Entry Supervisor must contact his/her supervisor and/or the Occupational Safety and Training Coordinator if he/she feels there is any chance of exposure to other hazardous chemicals. Acceptable entry

conditions for other identified hazardous substances will be less than 1/2 of the identified substances permissible exposure limit, threshold limit value or other recognized exposure limit.

Testing results and the monitor information must be recorded on the entry permit.

Continuous gas monitoring in the vicinity of the Entrants shall be performed during all confined space operations.

When entry is proposed into a space which cannot meet the minimum atmospheric conditions, Entry must be authorized by the Occupational Safety and Training Coordinator or designee.

8.8 Lifeline, Harness and Tripod

To facilitate non-entry rescue, a retrieval system or method 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. A confined space rescue team needs to be in place before the latter is considered an option. A tripod is not required when the vertical distance into the space is less than five feet.

Each Authorized Entrant shall use a full body harness, with a retrieval line attached to the Entrant and to the tripod (if tripod is not used, the free end of the life line will be secured to a stationary object). The tripod will be arranged so that rescue can begin as soon as the Attendant becomes aware that rescue is necessary.

8.9 Entry

The entry is to be made according to all conditions of the permit.

The Entry Supervisor must sign the permit allowing entry into the space.

The entry must be discontinued and the space evacuated if the conditions vary from those listed as acceptable.

Entry is permitted only for the duration of the permit.

Minimally acceptable conditions:

1. Minimization of physical hazards including electrical, hydraulic, steam, and mechanical hazards.
2. Air quality must meet conditions listed on the permit.

Hot work and/or use of hazardous materials (e.g. solvents, paints, cleaners) is not permitted unless authorized by the Occupational Safety and Training Coordinator. These activities may create hazards in a normally non-hazardous confined space.

8.10 Cancellation of Permit/Recordkeeping

Upon completion of the job, change of conditions which result in an unexpected evacuation of the permit space, emergency evacuations, shift change, otherwise discontinuity of the job, the Entry Supervisor must cancel the permit. Copies are to be distributed per section 7.0.

9.0 ALTERNATIVE PROCEDURES

The OSHA regulations allow permit spaces which have, as their only hazard, an actual or potential hazardous atmosphere to use alternative procedures for entry. Although these alternative procedures do not require the implementation of a full permit required confined space program, SUNY Oswego will still require a permit to be completed for such entries. Refer to the Confined Space Inventory in Appendix A for permit spaces which currently qualify for alternative procedures or for spaces that are eligible for re-classification as a non-permit space through other means such as deenergization.

Entry using Alternative Procedures can take place after the following procedures have been followed:

1. Conditions such as high temperature or high pressure which would make it unsafe to remove an entrance cover must be eliminated before the cover is removed.
2. Openings to the space must be guarded to protect employees from falling into the space, to protect employees in the space from object entering the space, and from the hazards of vehicle traffic. If the opening to the space is situated so that employees and objects cannot fall into the space, no additional guarding is necessary.
3. The internal atmosphere of the space must be tested with a calibrated, direct-reading instrument before any employee enters the space. The sequence for testing must be: 1, Oxygen content, 2, Flammable gases and vapors, 3, Potential toxic air contaminants.
4. If a hazardous atmosphere exists, employees must be prohibited from entry.
5. Forced air ventilation has eliminated any hazardous atmosphere.
6. The atmosphere in the space is monitored continuously based on initial readings.
7. Employees must exit the space immediately if a hazardous atmosphere is detected. The space must then be evaluated to determine the cause for the hazardous atmosphere and corrective measures implemented.
8. The Entry Supervisor and the Occupational Safety and Training Coordinator or a designee appointed by the Occupational Safety and Training Coordinator verifies that the space is safe for entry.
9. A Permit will still be completed and Non-Entry Rescue equipment will be used.

10.0 RECLASSIFICATION OF A PERMIT SPACE

A permit-space may be reclassified as a non-permit confined space if there are no potential atmospheric hazards and if all other hazards within the space are eliminated without entry into the space. The reclassification is valid as long as the non-atmospheric hazards remain eliminated.

Written certification by or verified by the Occupational Safety and Training Coordinator is required to reclassify a permit required confined space that has not been previously reclassified by the Environmental Health and Safety Department.

11.0 EMERGENCIES

11.1 Self Initiated Rescue

Emergency exit may be self initiated by the Entrants or ordered by the Attendant.

A self initiated evacuation is initiated when:

1. An automatic alarm is activated.
2. The Entrant(s) perceives that they are in danger.
3. The Entrant(s) identifies a hazard not accounted for on the permit.
4. A condition develops which is not in compliance with the permit.

The Attendant will initiate an evacuation whenever the Attendant observes:

1. A condition which is not allowed in the entry permit.
2. Behavioral effects of the hazard exposure.
3. A situation outside the space which could endanger Entrants.
4. An uncontrolled hazard within the permit space.

11.2 Emergency Rescue Assistance

Upon evaluation of the confined spaces located on our campus and the maintenance work performed in such spaces SUNY Oswego has chosen to use non-entry rescue via the use of tripod systems. This decision was based on several years of atmospheric testing with no hazardous atmospheres documented* by SUNY Oswego employees as well as the availability to lock out hazardous energy in the spaces prior to entry. As reflected in our data, the only foreseeable emergency in a space if this program is followed is that of a medical nature and not one that is due to hazardous conditions in the space.

* On July 18, 2013 a review of air monitoring data from 2002 to present was conducted – there was nothing of concern noted in the data to suggest the presence of atmospheric hazards. The information is from a spread sheet that was created through the use of information documented on confined space entry permits. For the time period from 2006 to present Oxygen levels for confined space entry by SUNY Oswego Staff ranged from 19.8 to 20.9% with 0% Carbon Monoxide, 0% Lower Exposure Level and 0% Hydrogen Sulfide these levels are consistent with what can be expected in normal breathing air. Although not required for ventilation of atmospheric hazards (alternative procedure) SUNY Oswego Staff occasionally use a coppus blower to provide air movement in the spaces to increase their comfort level.

We do however recognize that there may be rare instances when the use of a non-entry retrieval system is not practical, such as the entry into a horizontal space. In these instances a full evaluation of the space will take place to see if the space can be re-classified. In the event a re-classification is not an option a Confined Space Rescue Team will be contracted prior to entry into the space.

In cases of emergency exit in which rescue assistance is needed, the Attendant will immediately radio University Police to notify the local fire department and request to respond in an emergency fashion, providing the following information:

- Your name
- Nature of the Confined space emergency – such as a medical issue.
- Location
- Number of people involved
- Assessment of victim condition

Emergency entry into a confined space for rescue due to issues in the space itself is limited to the contracted Confined Space Rescue Team. For medical related emergencies such as heat exhaustion, slips resulting in strains or sprains – Non-entry rescue will be used to remove the entrant from the space and University Police will be notified so that medical assistance can be dispatched.

The Attendant should attempt non-entry retrieval if possible while waiting for the emergency responders. (Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life.)

12.0 TRAINING

All employees whose work is regulated by this Confined Space Entry Program will be trained to reach an understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.

Training shall be provided to each affected employee:

1. Before the employee is first assigned duties under this section.

2. Before there is a change in assigned duties.
3. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
4. Whenever there is a reason to believe there are deviations from the permit space entry procedures or inadequacies in the employee's knowledge or use of these procedures.

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

Training will be coordinated by Environmental Health and Safety and repeated as needed or upon request.

A certification (Record) of training will be maintained by Environmental Health and Safety. The certification (training record) shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification (record) shall be available for inspection by employees and their authorized representatives.

13.0 CONTRACTORS

When a contractor is employed to perform work that involves entry into a confined space the Director of the Physical Plant or designee will:

1. Determine whether the work falls under the General Industry Standards – 29 CFR 1910 or the Construction Standards – 29 CFR 1926.
2. Ensure that the Contractors Employees have been trained in Confined Space Entry, ask for documentation of the training, and ask to view the Contractors Safety Policy.
3. If the work will fall under the General Industry Standard they will 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 29 CFR 1910.146. In the event that the Contractor does not have a Permit Required Confined Space Program they will need to follow SUNY Oswego's Program.
4. Apprise the contractor of the elements, including the hazard identified and the College's experience with the space, that make the space in question a permit space.
5. Apprise the contractor of any precautions or procedures that the College has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
6. Coordinate entry operations with the contractor, when both College personnel and contractor personnel will be working in or near permit spaces.

7. 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.

In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

1. Obtain any available information regarding permit space hazards and entry operations from the college.
2. Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces.
3. Inform the College of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

14.0 EQUIPMENT USE AND MAINTENANCE

All equipment needed for safe entry, work and exit of confined spaces will be provided and maintained by SUNY Oswego. This equipment may include:

Equipment	Location
Atmospheric monitoring and testing equipment (air monitors)	CHP
Ventilation equipment	CHP
Communications equipment-individual radios	Shop issued
Personal protective equipment	Shop issued
Appropriate lighting	Shop issued
Barriers and shields to protect entrants and exclude bystanders	Grounds Department Plumbing Shop if trench box is needed
Ladders	Shop issued
Rescue and emergency equipment-tripod system	CHP

Each piece of equipment stored in CHP must be signed out by the appropriate Entry Supervisor and inspected prior to use. The Entry Supervisor must ensure that employees are trained on the proper use of the equipment. Additionally, air monitoring instrumentation must be recently calibrated and zeroed prior to use. The meters will indicate the number of days until the monitor needs to be recalibrated. The Occupational Safety and Training Coordinator will calibrate the meters at least every 180 days.

Appendix A

SUNY Oswego Confined Space Inventory

DESCRIPTION	SERVICER	LOCATION	PERMIT REQUIRED (Y/N)	NOTES (A) Atmospheric Hazard – alternative procedure to eliminate hazard by using ventilation may be used- 29CFR1910.146(c)(5) (R) Reclassification – Removal or elimination of hazards prior to entry may be possible such as use of LO/TO procedure
Swimming Pool	CHP	Lee Hall	Y (A)	Eval #15 DOL – Alternative Procedure for Atmospheric Hazards can be used for reclassification when cleaning with HCL.
#1 & #2 Pool Filters	CHP	Lee Hall	Y (R)	Eval #16 Replaced 1/01 - No Entry
Water Storage Tank	CHP	Lee Hall	Y (R)	Eval #25 Gone - 2002
#6,7,8,9 Boilers	CHP	Central Heating Plant (CHP)	Y	DOL – Entrapment Hazard – No reclassification Replaced with New Boilers Evaluation of New?
#7,8,9 Economizers	CHP	CHP	Y (R)	Eval #4 DOL- Entrapment Hazard – No reclassification Removed 1995 - 7&8 Internals removed
#1 & #2 Condensate Return Tanks	CHP	CHP	Y (R)	Eval #5 DOL – Air Monitor to ensure safe level of O ₂ Only 1 Tank - 2002
#1 & #2 Deaeriation Tanks	CHP	CHP	Y (R)	Eval #6 DOL – Air Monitor to ensure safe level of O ₂ Only 1 Tank - 2002
#1 & #2 Domestic Hot Water Tanks	CHP	CHP	Y (R)	Eval #12 DOL – Air Monitor to ensure safe level of O ₂ Replaced -Evaluation of New?
#1 & #2 Water Softener	CHP	CHP	Y (R)	Eval #7 No Entry - New Tank 1999

125,000 gal. Fuel Oil Storage Tank	CHP	CHP - Outside	Y	Eval #1 DOL – No reclassification Scheduled to be removed
Breeching System from Boiler Outlets to Stack	CHP	CHP	Y	Eval # 8 DOL – NPRC unless there is a leak then PRCS Removed
Main Blow Down Tank	CHP	CHP	Y (R)	Eval #9 DOL – Reclassify by air monitoring
Main House Air Tank	CHP	CHP	Y (R)	Eval #10 DOL – Air Monitor to ensure safe level of O₂
Soot Collection Units	CHP	CHP	Y	Eval #3 DOL- PRCS- Entrapment, converging walls. Removed
125 ft. Stack	CHP	CHP	Y	Eval #11 Entry Prohibited Removed
#1, 2, 3 Sand Filters	CHP	Laker Hall - Pool Mech. Room	Y (R)	Have been replaced with new filters Evaluation of New?
Swimming Pool & Diving Well	CHP	Laker Hall	Y (A)	DOL – Alternative Procedure for Atmospheric Hazards can be used for reclassification when cleaning with HCL.
Condensate Tank	CHP	Laker Boiler Room	Y (R)	Eval #4 DOL – Reclassify by air monitoring
Cyclotherm Boiler	CHP	Laker Hall	Y	Eval #13 Removed
#1 & #2 Domestic Hot Water Tanks	CHP	Laker Hall	Y (R)	DOL-Reclassify by air monitoring Replaced – Evaluate New
Cleaver Brooks Boiler	CHP	Laker Hall	Y	Eval #13 DOL- PRCS Entrapment Hazard Re-evaluate?

Steam Manholde M1	CHP	Outside CHP (south)	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole M2	CHP	Parking Lot E-17	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole M3	CHP	Parking Lot E-17 (west)	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole M4, 5, 6	CHP	Field North of Swetman Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole M7	CHP	Satellite Dish NE-22	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S1	CHP	Parking Lot E-22, East of Penfield	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S2	CHP	Edge of Lot E-22 Walkway	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S3	CHP	Knoll Above Cooper Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S4	CHP	North of Cooper Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S5	CHP	West of Hart Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole S6	CHP	Hewitt Courtyard	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W1	CHP	Across from Lanigan North	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000

Steam Manhole W2	CHP	Near Bridge on Rudolph Rd.	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W3	CHP	West of Mahar Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W4	CHP	West of Mahar Hall Loading Dock	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W5	CHP	West of Upper Bridge between Tyler and Seneca	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W6	CHP	West of Parking, Cayuga Circle	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W7	CHP	Cayuga Hall Northeast	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W8	CHP	Northwest of Onondaga Hall at Bus Stop	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W9	CHP	Southwest of Onondaga Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W10	CHP	Southwest of Onondaga Hall at Curb	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole W11	CHP	Northeast Oneida in Road	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole N1	CHP	Lakeside Dining Hall walk	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole N2	CHP	Riggs Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000

Steam Manhole N3	CHP	Waterbury Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole N4	CHP	Scales Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E1	CHP	North between Park and Wilber Halls	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E2	CHP	South Between Park and Wilber Halls	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E3	CHP	"T" South of Wilber Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E4	CHP	Southeast Corner of Park Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E5	CHP	North of Sheldon Hall (Old Coal Bunker)	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E6	CHP	Northeast of Sheldon Near Driveways	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E7	CHP	West of Mackin Hall Near Street	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E8	CHP	Mackin Hall in Corner	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E9	CHP	Northeast of Snygg Hall	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E10	CHP	Corner of Snygg	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000

Steam Manhole E11	CHP	North of Snygg's East Corner	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Steam Manhole E12	CHP	Northwest of Snygg Hall in Sidewalk	Y (R)	Eval #2 DOL- reclassify by air monitoring – block/bleed –LO/TO New Manhole - 2000
Elevator Shafts	Contractor	Campus	Y (R)	Eval #18 DOL- Reclassify if can LO/TO Not entered by SUNY Oswego employees – Contractor Only
Gas Regulator Pit	City	Washington Blvd. Near Sheldon	Y (R)	Eval #17 City Property - We Do Not Enter
Electric Power Manholes	Elec.	Throughout Campus - See Distribution Map Attached	Y (R)	Eval #23 Reclassify by LO/TO, air monitor space
2 - 4,000 Gal. Gasoline Tanks	Garage	South Side of Maintenance Bldg. #12	Y	Eval #20 PRCS
Main Duct Work	HVAC	Lee Hall	Y	No Entry
Cyclone Dust Collectors	Other	Outside Park Hall, Service Building #20	Y	DOL- PRCS Entry Prohibited
Water Meter Pit	Plumbing	Johnson Rd. for Fallbrook	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂ Fallbrook and Rice Creek Have Aqua Service - 2002
Water Meter Pit	Plumbing	West End of Campus - above ground 1999	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂ Fallbrook and Rice Creek Have Aqua Service - 2002
Sewer Lift Stations	Plumbing	Throughout Campus - Manholes only for pump foot valves	Y (A)(R)	Replaced With Above Ground - 2001
Main Lift Station Pump Pit (see evaluation for sewer lift stations & wet wells)	Plumbing	Main Lift Station	Y (A)(R)	Eval #21

Water Pump Pit	Plumbing	Water Fountain	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂
Water Meter Pit	Plumbing	In front of Johnson Hall	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂
Water Meter Pit	Plumbing	Southeast Corner Inside Johnson Hall	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂
Water Meter Pit	Plumbing	Barnes Dr. & Rt. 104 EC - 7 Lot	Y (R)	Eval #22 DOL – Air Monitor to ensure safe level of O₂
Signal Manholes		Throughout Campus	Y (R)	
Excavations > 4 Feet		Throughout Campus	Y (R)	Eval #24
Waste Water Sump	CHP	CHP - Overhead Door	N	
Brine Tank	CHP	CHP	N	Removed and Replaced with 2 new
Areas Under Pool	CHP	CHP - Lee Hall	N	DOL- NPRCS
Drain Sump	CHP	Laker Hall - Pool Mech. Room	N	DOL- NPRCS
HV - 6	HVAC	Laker Hall Exterior Southeast Room	N	
SF - 1	HVAC	Rich Hall 2nd Floor Fan Room	N	

S - 3, 4, 5, 6, 7	HVAC	Swetman Hall North Mech. Room (Locker Room)	N	
S - 1, 2	HVAC	Swetman Hall South Mech. Room	N	
S - 9	HVAC	Poucher Hall East Mech. Room	N	
S - 8, 10	HVAC	Poucher Hall South Mech. Room	N	
40 Reheat Units	HVAC	Hewitt Union Ceilings	N	DOL- NPRCS
Cooling Tower	HVAC	Commissary Mech. Room	N	DOL- NPRCS
Cooling Tower	HVAC	Cooper Hall East of Loading Dock	N	DOL- NPRCS
Cooling Tower	HVAC	Culkin Hall Roof	N	DOL- NPRCS
Cooling Tower	HVAC	Hewitt Union Roof	N	DOL- NPRCS
Cooling Tower	HVAC	Tyler Hall Roof	N	DOL- NPRCS
Cooling Tower	HVAC	Littlepage Hall Fan Mech. Room	N	DOL- NPRCS
Cooling Tower	HVAC	Mahar Hall Penthouse Mech. Room	N	DOL- NPRCS
Cooling Tower	HVAC	Pathfinder Hall Fan Mech. Room	N	DOL- NPRCS

Water Pump Pit w/ Cooling Tower	HVAC	North of Penfield Library	N	Eval #19 Old Could be reclassified but has been replaced Above Ground 2002
Cooling Tower	HVAC	North of Penfield Library	N	DOL- NPRCS
Cooling Tower	HVAC	Outside Snygg Hall	N	DOL- NPRCS
Cooling Tower	HVAC	Tyler Hall Roof	N	DOL- NPRCS
Cooling Tower	HVAC	Wilber Hall Penthouse Mech. Room	N	DOL- NPRCS
S - 3, 4, 5, 6, 7	HVAC	Swetman Hall North Mech. Room (Locker Room)	N	
AC- 2, 3, 4, 5, 6, 7	HVAC	Snygg Hall Bsmt. Main Mech. Room	N	
AC -1 HV - 1	HVAC	Snygg Hall Bsmt. Northwest Corner	N	
HV - 2	HVAC	Snygg Hall Bsmt. Northeast Corner	N	
HV - 3	HVAC	Snygg Hall 1st Floor Southeast Corner	N	
AC - 2 HV- 2, 3	HVAC	Tyler Hall Mech. Room #33	N	
AC - 1, 3, 4 HV - 1	HVAC	Tyler Hall Mech. Room #50	N	
HV - 4	HVAC	Tyler Hall 2nd Floor Room 237	N	

HV - 5	HVAC	Tyler Hall 2nd Floor Room 202	N	
HV - 6	HVAC	Tyler Hall 2nd Floor Room 216	N	
HV - 1	HVAC	Walker Health Center Bsmt. Mech Room	N	
HV - 2	HVAC	Walker Health Center Penthouse Mech. Room	N	
AC - 1, 2	HVAC	Wilber Hall Penthouse Mech. Room	N	
HV - 1	HVAC	Laker Hall Bsmt. East Mech. Room	N	
HV - 2	HVAC	Laker Hall Behind Archery Room	N	
Cooling Tower	HVAC	North of Penfield Library	N	
Cooling Tower	HVAC	Outside Snygg Hall	N	
Cooling Tower	HVAC	Tyler Hall Roof	N	
Cooling Tower	HVAC	Wilber Hall Penthouse Mech. Room	N	
S - 3, 4, 5, 6, 7	HVAC	Swetman Hall North Mech. Room (Locker Room)	N	
HV - 3	HVAC	Laker Hall Bsmt. North Mech. Room	N	

HV - 4	HVAC	Laker Hall 1st Floor Northeast Corner (Gym)	N	
HV - 5	HVAC	Laker Hall Exterior Northeast Room	N	
HV - 7	HVAC	Laker Hall Southeast Corner (Gym)	N	
HV - 8, 9, 10, 11	HVAC	Laker Hall 2nd Floor Mech/ Room	N	
AC - 1, 2, 3	HVAC	Culkin Basement Mech. Room	N	
AC - 4, 5	HVAC	Culkin Penthouse Mech. Room	N	
AC - 1, 2, 3, 4 HV - 1, 2, 3	HVAC	Hewitt Union North Mech. Room	N	
AC - 5, 6 HV - 4, 5, 6	HVAC	Hewitt Union South Mech. Room	N	
AC - 7	HVAC	Hewitt Union Bowling Alley Service Area	N	
AC - 1, 2, 3 HV - 1	HVAC	Lanigan Hall 1st Floor	N	
AC - 4	HVAC	Lanigan Hall 2nd Floor Northeast Stairway	N	
AC - 5	HVAC	Lanigan Hall 2nd Floor Northwest Stairway	N	
AC - 6	HVAC	Lanigan Hall 2nd Floor Southeast Stairway	N	

AC - 7	HVAC	Lanigan Hall 2nd Floor Southwest Stairway	N	
AC -1 HV - 1	HVAC	Mahar Hall East Mech. Room	N	
AC - 2	HVAC	Mahar Hall West Mech. Room	N	
AC - 1, 2, 3, 4, 5, 6, 7	HVAC	Penfield Library Bsmt. Mech. Room	N	
Crawl Space		Furn. Storage off of mech. rm. under each wing of Riggs Hall	N	
Crawl Space		Under Director's apt. and N. wing of Johnson	N	
Crawl Space		Under Lonis, Moreland, Mackin Complex	N	
Crawl Space		Furn. Storage off of mech. rm. under each wing of Scales Hall	N	
Crawl Space		Furn. Storage off of mech. rm. under each wing of Waterbury Hall	N	
AHU-1,2,3,4	HVAC	Sheldon Attic	N-L/T	
HU-1	HVAC	Lee Hall 3rd Floor	N	
HU-2	HVAC	Lee Hall 2nd Floor	N	

AHU-1,2,3	HVAC	Tyler Hall Roof	N	
SF-1, SF-2	HVAC	Pathfinder Basement Fan Room	N-L/T	
SF-1, SF-2	HVAC	Littlepage Basement Fan Room	N-L/T	
AHU-1, MUA-1	HVAC	Lakeside Upper Mechanical Room	N-L/T	
AHU-R-1	HVAC	Riggs Hall Basement Mechanical Room	N-L/T	
*Exhaust Fans	HVAC	Waterbury and Scales Hall Basement Crawlspace?	N/Y	An access hatch was added which may be used instead of entering through the crawl space. If entering through the crawl space evaluation will be needed to ensure no sewer gas is present.
HRV-1 & HRV-2	HVAC	Hart Hall Roof	N-L/T	
HV-1, AC-2 L/T	HVAC	Cooper Upper Mechanical Room	N	
Electric Room Exhaust Fan	Electrical	Park Hall-East Side	N	
Roof Exhaust Fans Inside the NW, NE and SW Corners of the Penthouses. Small Restricted Access Panels on Outside Walls.		Seneca Hall Roof	N	
Dining Room Supply Fan	HVAC	Mackin Hall Upper Mech Room	N	

Roof Cupolas	HVAC & Electrical	Piez	N	
Roof Penthouses and Gaylord Units		Littlepage and Pathfinder	N-L/T	
Exhaust Fan-4th Floor Center Hall Hidden Room E8		Cayuga Hall	N	
1st Floor Metal Shop Welding Area-Exhaust Fan Above Ceiling		Wilber Hall	N	
1st Floor AHV-1 and RF-1		Rich Hall	N-L/T	
Mechanical Room EF-3		Lanigan Hall		
Mechanical Room EF-3		Lanigan Hall		
RF 129 North Mechanical		Tyler Hall		
RF 129 North Mechanical		Tyler Hall		
Room 216-HV4		Tyler Hall		
Room 216-HV4		Tyler Hall		
Room 216-HV4		Tyler Hall		

Room 202 HV5		Tyler Hall		Lock door so no one knock ladder
E7 E3 Dishroom		Littlepage Dining		Crawlspace to get to. Slippery
210 A Storage EF 05		Laker Hall		
NW Closet 2nd Floor		Laker Hall		Climb up ladder-stand on ?-rebar clip
Mechanical Room-HV10		Laker Hall		
HV 8 & 9		Laker Hall		
E3		Laker Hall		
Opposite E3		Laker Hall		
AHU-1, AHU-2, AHU-3, AHU-4 Trane Air Handling Units	HVAC	Shineman 8-MG48		
AHU-5, AHU-6 Trane Air Handling Units	HVAC	Shineman 8-MR79		
LEF-1 Lab Exhaust Fan Unit	HVAC	Shineman 8-Roof		
Cooling Tower/Chiller AAON	HVAC	North of Townhouse A		

Cooling Tower/Chiller AAON	HVAC	South of Townhouse H		
Cooling Tower BAC	HVAC	North of Park Hall		

Appendix B

29 CFR 1910.146

Permit Required Confined Spaces

UNITED STATES
DEPARTMENT OF LABOR OSHA

- Part Number: 1910
- Part Title: Occupational Safety and Health Standards
- Subpart: J
- Subpart Title: General Environmental Controls
- Standard Number: 1910.146
- Title: Permit-required confined spaces
- Appendix: A, B, C, D, E, F
- GPO Source: e-CFR

1910.146(a)

Scope and application. This section contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces. This section does not apply to agriculture, to construction, or to shipyard employment (Parts 1928, 1926, and 1915 of this chapter, respectively).

1910.146(b)

Definitions.

"Acceptable entry conditions" means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

"Attendant" means 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" means an employee who is authorized by the employer to enter a permit space.

"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.

"Confined space" means a space that:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.

"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.

"Emergency" means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

"Engulfment" means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

"Entry" means 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 (permit)" means 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 paragraph (f) of this section.

"Entry supervisor" means 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.

NOTE: An entry supervisor also may 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" means an atmosphere 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:

- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

- (3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
- (4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

- (5) Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

"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.

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

NOTE: Some materials -- hydrogen fluoride gas and cadmium vapor, for example -- may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12- 72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

"Inerting" means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

"Isolation" means the process by which a permit space is removed from service and completely 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; or blocking or disconnecting all mechanical linkages.

"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.

"Non-permit confined space" means 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 harm.

"Oxygen deficient atmosphere" means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen enriched atmosphere" means an atmosphere containing more than 23.5 percent oxygen by volume.

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- (4) Contains any other recognized serious safety or health hazard.

"Permit-required confined space program (permit space program)" means 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" means 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" means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

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

"Retrieval system" means the equipment (including a 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" means 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.

NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

1910.146(c)

General requirements.

1910.146(c)(1)

The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

NOTE: Proper application of the decision flow chart in Appendix A to section 1910.146 would facilitate compliance with this requirement.

1910.146(c)(2)

If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

NOTE: A sign reading DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign.

1910.146(c)(3)

If the employer decides that its employees will not enter permit spaces, the employer shall take effective measures to prevent its employees from entering the permit spaces and shall comply with paragraphs (c)(1), (c)(2), (c)(6), and (c)(8) of this section.

1910.146(c)(4)

If the employer decides that its employees will enter permit spaces, the employer shall develop and implement a written

permit space program that complies with this section. The written program shall be available for inspection by employees and their authorized representatives.

1910.146(c)(5)

An employer may use the alternate procedures specified in paragraph (c)(5)(ii) of this section for entering a permit space under the conditions set forth in paragraph (c)(5)(i) of this section.

1910.146(c)(5)(i)

An employer whose employees enter a permit space need not comply with paragraphs (d) through (f) and (h) through (k) of this section, provided that:

1910.146(c)(5)(i)(A)

The employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere;

1910.146(c)(5)(i)(B)

The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry;

1910.146(c)(5)(i)(C)

The employer develops monitoring and inspection data that supports the demonstrations required by paragraphs (c)(5) (i)(A) and (c)(5)(i)(B) of this section;

1910.146(c)(5)(i)(D)

If an initial entry of the permit space is necessary to obtain the data required by paragraph (c)(5)(i)(C) of this section, the entry is performed in compliance with paragraphs (d) through (k) of this section;

1910.146(c)(5)(i)(E)

The determinations and supporting data required by paragraphs (c)(5)(i)(A), (c)(5)(i)(B), and (c)(5)(i)(C) of this section are documented by the employer and are made available to each employee who enters the permit space under the terms of paragraph (c)(5) of this section or to that employee's authorized representative; and

1910.146(c)(5)(i)(F)

Entry into the permit space under the terms of paragraph (c)(5)(i) of this section is performed in accordance with the requirements of paragraph (c)(5)(ii) of this section.

NOTE: See paragraph (c)(7) of this section for reclassification of a permit space after all hazards within the space have been eliminated.

1910.146(c)(5)(ii)

The following requirements apply to entry into permit spaces that meet the conditions set forth in paragraph (c)(5)(i) of this section.

1910.146(c)(5)(ii)(A)

Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.

..1910.146(c)(5)(ii)(B)

1910.146(c)(5)(ii)(B)

When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

1910.146(c)(5)(ii)(C)

Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph.

1910.146(c)(5)(ii)(C)(1)

Oxygen content,

1910.146(c)(5)(ii)(C)(2)

Flammable gases and vapors, and

1910.146(c)(5)(ii)(C)(3)

Potential toxic air contaminants.

1910.146(c)(5)(ii)(D)

There may be no hazardous atmosphere within the space whenever any employee is inside the space.

1910.146(c)(5)(ii)(E)

Continuous forced air ventilation shall be used, as follows:

1910.146(c)(5)(ii)(E)(1)

An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;

1910.146(c)(5)(ii)(E)(2)

The forced air ventilation shall 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;

1910.146(c)(5)(ii)(E)(3)

The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

1910.146(c)(5)(ii)(F)

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing required by this paragraph.

1910.146(c)(5)(ii)(G)

If a hazardous atmosphere is detected during entry:

1910.146(c)(5)(ii)(G)(1)

Each employee shall leave the space immediately;

1910.146(c)(5)(ii)(G)(2)

The space shall be evaluated to determine how the hazardous atmosphere developed; and

1910.146(c)(5)(ii)(G)(3)

Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

1910.146(c)(5)(ii)(H)

The employer shall verify that the space is safe for entry and that the pre-entry measures required by paragraph (c)(5)

(ii) of this section have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space or to that employee's authorized representative.

1910.146(c)(6)

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to

entrants, the employer shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

1910.146(c)(7)

A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

1910.146(c)(7)(i)

If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

1910.146(c)(7)(ii)

If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under paragraphs (d) through (k) of this section. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

NOTE: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards. Paragraph (c)(5) covers permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

1910.146(c)(7)(iii)

The employer shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space or to that employee's authorized representative.

1910.146(c)(7)(iv)

If hazards arise within a permit space that has been declassified to a non-permit space under paragraph (c)(7) of this section, each employee in the space shall exit the space. The employer shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this section.

1910.146(c)(8)

When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:

1910.146(c)(8)(i)

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;

1910.146(c)(8)(ii)

Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;

1910.146(c)(8)(iii)

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;

1910.146(c)(8)(iv)

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

1910.146(c)(8)(v)

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.

1910.146(c)(9)

In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

1910.146(c)(9)(i)

Obtain any available information regarding permit space hazards and entry operations from the host employer;

1910.146(c)(9)(ii)

Coordinate entry operations with the host employer, 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

1910.146(c)(9)(iii)

Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

1910.146(d)

Permit-required confined space program (permit space program). Under the permit space program required by paragraph (c)(4) of this section, the employer shall:

1910.146(d)(1)

Implement the measures necessary to prevent unauthorized entry;

1910.146(d)(2)

Identify and evaluate the hazards of permit spaces before employees enter them;

1910.146(d)(3)

Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

1910.146(d)(3)(i)

Specifying acceptable entry conditions;

1910.146(d)(3)(ii)

Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces;

1910.146(d)(3)(iii)

Isolating the permit space;

1910.146(d)(3)(iv)

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

1910.146(d)(3)(v)

Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards; and

1910.146(d)(3)(vi)

Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.

1910.146(d)(4)

Provide the following equipment (specified in paragraphs (d)(4)(i) through (d)(4)(ix) of this section) at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly:

1910.146(d)(4)(i)

Testing and monitoring equipment needed to comply with paragraph (d)(5) of this section;

1910.146(d)(4)(ii)

Ventilating equipment needed to obtain acceptable entry conditions;

1910.146(d)(4)(iii)

Communications equipment necessary for compliance with paragraphs (h)(3) and (i)(5) of this section;

1910.146(d)(4)(iv)

Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees;

1910.146(d)(4)(v)

Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency;

1910.146(d)(4)(vi)

Barriers and shields as required by paragraph (d)(3)(v) of this section.

1910.146(d)(4)(vii)

Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;

1910.146(d)(4)(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

1910.146(d)(4)(ix)

Any other equipment necessary for safe entry into and rescue from permit spaces.

1910.146(d)(5)

Evaluate permit space conditions as follows when entry operations are conducted:

1910.146(d)(5)(i)

Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working;

1910.146(d)(5)(ii)

Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations; and

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.

1910.146(d)(5)(iv)

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;

1910.146(d)(5)(v)

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;

1910.146(d)(5)(vi)

Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accord with paragraph (d) of this section.

NOTE: Atmospheric testing conducted in accordance with Appendix B to section 1910.146 would be considered as satisfying the requirements of this paragraph. For permit space operations in sewers, atmospheric testing conducted in accordance with Appendix B, as supplemented by Appendix E to section 1910.146, would be considered as satisfying the requirements of this paragraph.

1910.146(d)(6)

Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations;

NOTE: Attendants may be assigned to monitor more than one permit space provided the duties described in paragraph

(i) of this section can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as the duties described in paragraph (i) of this section can be effectively performed for each permit space that is monitored.

1910.146(d)(7)

If multiple spaces are to be monitored by a single attendant, include 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 distraction from the attendant's responsibilities under paragraph (i) of this section;

1910.146(d)(8)

Designate the persons who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by paragraph (g) of this section;

1910.146(d)(9)

Develop and implement procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue;

1910.146(d)(10)

Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this section;

1910.146(d)(11)

Develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one employer do not endanger the employees of any other employer;

1910.146(d)(12)

Develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed;

1910.146(d)(13)

Review entry operations when the employer has reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized; and

NOTE: Examples of circumstances requiring the review of the permit space program are: any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program.

1910.146(d)(14)

Review the permit space program, using the canceled permits retained under paragraph (e)(6) of this section within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

NOTE: Employers may perform a single annual review covering all entries performed during a 12-month period. If no

entry is performed during a 12-month period, no review is necessary.

Appendix C to section 1910.146 presents examples of permit space programs that are considered to comply with the requirements of paragraph (d) of this section.

1910.146(e)

Permit system.

1910.146(e)(1)

Before entry is authorized, the employer shall document the completion of measures required by paragraph (d)(3) of this section by preparing an entry permit.

NOTE: Appendix D to section 1910.146 presents examples of permits whose elements are considered to comply with the requirements of this section.

1910.146(e)(2)

Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.

1910.146(e)(3)

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.

1910.146(e)(4)

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit in accordance with paragraph (f)(2) of this section.

1910.146(e)(5)

The entry supervisor shall terminate entry and cancel the entry permit when:

1910.146(e)(5)(i)

The entry operations covered by the entry permit have been completed; or

1910.146(e)(5)(ii)

A condition that is not allowed under the entry permit arises in or near the permit space.

1910.146(e)(6)

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.

1910.146(f)

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

1910.146(f)(1)

The permit space to be entered;

1910.146(f)(2)

The purpose of the entry;

1910.146(f)(3)

The date and the authorized duration of the entry permit;

1910.146(f)(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;

NOTE: This requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.

1910.146(f)(5)

The personnel, by name, currently serving as attendants;

1910.146(f)(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;

1910.146(f)(7)

The hazards of the permit space to be entered;

1910.146(f)(8)

The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;

NOTE: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.

1910.146(f)(9)

The acceptable entry conditions;

1910.146(f)(10)

The results of initial and periodic tests performed under paragraph (d)(5) of this section, accompanied by the names or initials of the testers and by an indication of when the tests were performed;

1910.146(f)(11)

The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services;

1910.146(f)(12)

The communication procedures used by authorized entrants and attendants to maintain contact during the entry;

1910.146(f)(13)

Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this section;

1910.146(f)(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.

1910.146(g)

Training.

1910.146(g)(1)

The employer 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.

1910.146(g)(2)

Training shall be provided to each affected employee:

1910.146(g)(2)(i)

Before the employee is first assigned duties under this section;

1910.146(g)(2)(ii)

Before there is a change in assigned duties;

1910.146(g)(2)(iii)

Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

1910.146(g)(2)(iv)

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.

1910.146(g)(3)

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.

1910.146(g)(4)

The employer shall certify that the training required by paragraphs (g)(1) through (g)(3) of this section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

1910.146(h)

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

1910.146(h)(1)

Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

1910.146(h)(2)

Properly use equipment as required by paragraph (d)(4) of this section;

1910.146(h)(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;

1910.146(h)(4)

Alert the attendant whenever:

1910.146(h)(4)(i)

The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or

1910.146(h)(4)(ii)

The entrant detects a prohibited condition; and

1910.146(h)(5)

Exit from the permit space as quickly as possible whenever:

1910.146(h)(5)(i)

An order to evacuate is given by the attendant or the entry supervisor,

1910.146(h)(5)(ii)

The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,

1910.146(h)(5)(iii)

The entrant detects a prohibited condition, or

1910.146(h)(5)(iv)

An evacuation alarm is activated.

1910.146(i)

Duties of attendants. The employer shall ensure that each attendant:

1910.146(i)(1)

Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

1910.146(i)(2)

Is aware of possible behavioral effects of hazard exposure in authorized entrants;

1910.146(i)(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;

1910.146(i)(4)

Remains outside the permit space during entry operations until relieved by another attendant;

NOTE: When the employer's permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations as required by paragraph (k)

(1) of this section and if they have been relieved as required by paragraph (i)(4) of this section.

1910.146(i)(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;

1910.146(i)(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;

1910.146(i)(6)(i)

If the attendant detects a prohibited condition;

1910.146(i)(6)(ii)

If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;

1910.146(i)(6)(iii)

If the attendant detects a situation outside the space that could endanger the authorized entrants; or

1910.146(i)(6)(iv)

If the attendant cannot effectively and safely perform all the duties required under paragraph (i) of this section;

1910.146(i)(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;

1910.146(i)(8)

Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

1910.146(i)(8)(i)

Warn the unauthorized persons that they must stay away from the permit space;

1910.146(i)(8)(ii)

Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and

1910.146(i)(8)(iii)

Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;

1910.146(i)(9)

Performs non-entry rescues as specified by the employer's rescue procedure; and

1910.146(i)(10)

Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

1910.146(j)

Duties of entry supervisors. The employer shall ensure that each entry supervisor:

1910.146(j)(1)

Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

1910.146(j)(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;

1910.146(j)(3)

Terminates the entry and cancels the permit as required by paragraph (e)(5) of this section;

1910.146(j)(4)

Verifies that rescue services are available and that the means for summoning them are operable;

1910.146(j)(5)

Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and

1910.146(j)(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.

1910.146(k)

Rescue and emergency services.

1910.146(k)(1)

An employer who designates rescue and emergency services, pursuant to paragraph (d)(9) of this section, shall:

1910.146(k)(1)(i)

Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;

Note to paragraph (k)(l)(i): What will be considered timely will vary according to the specific hazards involved in each entry. For example, §1910.134, Respiratory Protection, 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.

1910.146(k)(1)(ii)

Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;

1910.146(k)(1)(iii)

Select a rescue team or service from those evaluated that:

1910.146(k)(1)(iii)(A)

Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;

1910.146(k)(1)(iii)(B)

Is equipped for and proficient in performing the needed rescue services;

1910.146(k)(1)(iv)

Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and

1910.146(k)(1)(v)

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.

Note to paragraph (k)(1): Non-mandatory Appendix F contains examples of criteria which employers can use in evaluating prospective rescuers as required by paragraph (k)(l) of this section.

1910.146(k)(2)

An employer whose employees have been designated to provide permit space rescue and emergency services shall take the following measures:

1910.146(k)(2)(i)

Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees so they are proficient in the use of that PPE, at no cost to those employees;

1910.146(k)(2)(ii)

Train affected employees to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant, as provided by paragraphs (g) and (h) of this section;

1910.146(k)(2)(iii)

Train affected 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

1910.146(k)(2)(iv)

Ensure that 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.

1910.146(k)(3)

To facilitate non-entry rescue, 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.

1910.146(k)(3)(i)

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.

1910.146(k)(3)(ii)

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

1910.146(k)(4)

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

1910.146(l)

Employee participation.

1910.146(l)(1)

Employers shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by paragraph (c) of this section.

1910.146(l)(2)

Employers shall make available to affected employees and their authorized representatives all information required to be developed by this section.

[58 FR 4549, Jan. 14, 1993; 58 FR 34845, June 29, 1993; 59 FR 26115, May 19, 1994; 63 FR 66038, Dec. 1, 1998; 76 FR 80739, Dec. 27, 2011]

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UNITED STATES

DEPARTMENT OF LABOR

Appendix C

29 CFR 1926 Subpart AA

Permit Required Confined Spaces

Subpart AA—Confined Spaces in Construction

AUTHORITY: 40 U.S.C. 3701 *et seq.*; 29 U.S.C. 653, 655, 657; Secretary of Labor's Order No. 1-2012 (77 FR 3912); and 29 CFR part 1911.

SOURCE: 80 FR 25518, May 4, 2015, unless otherwise noted.

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§1926.1200 [Reserved]

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§1926.1201 Scope.

(a) This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces, subject to the exceptions in paragraph (b) of this section.

NOTE TO PARAGRAPH (a). Examples of locations where confined spaces may occur include, but are not limited to, the following: Bins; boilers; pits (such as elevator, escalator, pump, valve or other equipment); manholes (such as sewer, storm drain, electrical, communication, or other utility); tanks (such as fuel, chemical, water, or other liquid, solid or gas); incinerators; scrubbers; concrete pier columns; sewers; transformer vaults; heating, ventilation, and air-conditioning (HVAC) ducts; storm drains; water mains; precast concrete and other pre-formed manhole units; drilled shafts; enclosed beams; vessels; digesters; lift stations; cesspools; silos; air receivers; sludge gates; air preheaters; step up transformers; turbines; chillers; bag houses; and/or mixers/reactors.

(b) *Exceptions.* This standard does not apply to:

- (1) Construction work regulated by subpart P of this part (Excavations).
- (2) Construction work regulated by subpart S of this part (Underground Construction, Caissons, Cofferdams and Compressed Air).
- (3) Construction work regulated by subpart Y of this part (Diving).

(c) Where this standard applies and there is a provision that addresses a confined space hazard in another applicable OSHA standard, the employer must comply with both that requirement and the applicable provisions of this standard.

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§1926.1202 Definitions.

The following terms are defined for the purposes of this subpart only:

Acceptable entry conditions means the conditions that must exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work within, the space.

Attendant means an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified in §1926.1209.

Authorized entrant means an employee who is authorized by the entry supervisor to enter a permit space.

Barrier means a physical obstruction that blocks or limits access.

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.

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

Confined space means a space that:

- (1) Is large enough and so configured that an employee can bodily enter it;
- (2) Has limited or restricted means for entry and exit; and
- (3) Is not designed for continuous employee occupancy.

Control means the action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the engineering methods used for this purpose. Personal protective equipment is not a control.

Controlling Contractor is the employer that has overall responsibility for construction at the worksite.

NOTE TO THE DEFINITION OF "CONTROLLING CONTRACTOR". If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.

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.

Early-warning system means the method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include, but are not limited to: Alarms activated by remote sensors; and lookouts with equipment for immediately communicating with the authorized entrants and attendants.

Emergency means any occurrence (including any failure of power, hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

Entry means the action by which any part of 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, whether or not such action is intentional or any work activities are actually performed in the space.

Entry Employer means any employer who decides that an employee it directs will enter a permit space.

NOTE TO THE DEFINITION OF "ENTRY EMPLOYER". An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.

Entry permit (permit) means the written or printed document that is provided by the employer who designated the space a permit space to allow and control entry into a permit space and that contains the information specified in §1926.1206.

Entry rescue occurs when a rescue service enters a permit space to rescue one or more employees.

Entry supervisor means the qualified 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 standard.

NOTE TO THE DEFINITION OF "ENTRY SUPERVISOR" An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard 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.

Hazard means a physical hazard or hazardous atmosphere. See definitions below.

Hazardous atmosphere means an atmosphere 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:

(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE TO PARAGRAPH (2) OF THE DEFINITION OF "HAZARDOUS ATMOSPHERE". This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet (1.52 meters) or less.

(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in subpart D of this part (Occupational Health and Environmental Control), or in subpart Z of this part (Toxic and Hazardous Substances), and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE TO PARAGRAPH (4) OF THE DEFINITION OF "HAZARDOUS ATMOSPHERE". An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this definition.

(5) Any other atmospheric condition that is immediately dangerous to life or health.

NOTE TO PARAGRAPH (5) OF THE DEFINITION OF "HAZARDOUS ATMOSPHERE". For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, §1926.59, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Host employer means the employer that owns or manages the property where the construction work is taking place.

NOTE TO THE DEFINITION OF "HOST EMPLOYER". If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, and has transferred to that entity the information specified in §1926.1203(h)(1), OSHA will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case will there be more than one host employer.

Hot work means operations capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating).

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

NOTE TO THE DEFINITION OF "IMMEDIATELY DANGEROUS TO LIFE OR HEALTH". Some materials—hydrogen fluoride gas and cadmium vapor, for example—may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" after recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

Inerting means displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE TO THE DEFINITION OF "INTERING". This procedure produces an IDLH oxygen-deficient atmosphere.

Isolate or isolation means the process by which employees in a confined space are completely protected against the release of energy and material into the space, and contact with a physical hazard, 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; or placement of barriers to eliminate the potential for employee contact with a physical hazard.

Limited or restricted means for entry or exit means a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.

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.

Lockout means the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lower flammable limit or lower explosive limit means the minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

Monitor or monitoring means the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

Non-entry rescue occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space.

Non-permit confined space means a confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space, as defined in this subpart.

Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

(4) Contains any other recognized serious safety or health hazard.

Permit-required confined space program (permit space program) means 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.

Physical hazard means an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: Explosives (as defined by paragraph (n) of §1926.914, definition of "explosive"); mechanical, electrical, hydraulic and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).

Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee.

Qualified person means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Representative permit space means a mock-up of a confined space that has entrance openings that are similar to, and is of similar size, configuration, and accessibility to, the permit space that authorized entrants enter.

Rescue means retrieving, and providing medical assistance to, one or more employees who are in a permit space.

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

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

Serious physical damage means an impairment or illness in which a body part is made functionally useless or is substantially reduced in efficiency. Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional.

Tagout means:

(1) Placement of a tagout device on a circuit or equipment that has been deenergized, in accordance with an established procedure, to indicate that the circuit or equipment being controlled may not be operated until the tagout device is removed; and

(2) The employer ensures that:

(i) Tagout provides equivalent protection to lockout; or

(ii) That lockout is infeasible and the employer has relieved, disconnected, restrained and otherwise rendered safe stored (residual) energy.

Test or testing means 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.

NOTE TO THE DEFINITION OF "TEST OR TESTING". Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

Ventilate or *ventilation* means controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of §1926.57 (Ventilation).

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§1926.1203 General requirements.

(a) Before it begins work at a worksite, each employer must ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work, and identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing as necessary.

(b) If the workplace contains one or more permit spaces, the employer who identifies, or who receives notice of, a permit space must:

(1) Inform exposed employees by posting danger signs or by any other equally effective means, of the existence and location of, and the danger posed by, each permit space; and

NOTE TO PARAGRAPH (b)(1). A sign reading "DANGER—PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" or using other similar language would satisfy the requirement for a sign.

(2) Inform, in a timely manner and in a manner other than posting, its employees' authorized representatives and the controlling contractor of the existence and location of, and the danger posed by, each permit space.

(c) Each employer who identifies, or receives notice of, a permit space and has not authorized employees it directs to work in that space must take effective measures to prevent those employees from entering that permit space, in addition to complying with all other applicable requirements of this standard.

(d) If any employer decides that employees it directs will enter a permit space, that employer must have a written permit space program that complies with §1926.1204 implemented at the construction site. The written program must be made available prior to and during entry operations for inspection by employees and their authorized representatives.

(e) An employer may use the alternate procedures specified in paragraph (e)(2) of this section for entering a permit space only under the conditions set forth in paragraph (e)(1) of this section.

(1) An employer whose employees enter a permit space need not comply with §§1926.1204 through 1206 and §§1926.1208 through 1211, provided that all of the following conditions are met:

(i) The employer can demonstrate that all physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere;

(ii) The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry, and that, in the event the ventilation system stops working, entrants can exit the space safely;

(iii) The employer develops monitoring and inspection data that supports the demonstrations required by paragraphs (e)(1)(i) and (ii) of this section;

(iv) If an initial entry of the permit space is necessary to obtain the data required by paragraph (e)(1)(iii) of this section, the entry is performed in compliance with §§1926.1204 through 1926.1211;

(v) The determinations and supporting data required by paragraphs (e)(1)(i), (ii), and (iii) of this section are documented by the employer and are made available to each employee who enters the permit space under the terms of paragraph (e) of this section or to that employee's authorized representative; and

(vi) Entry into the permit space under the terms of paragraph (e)(1) of this section is performed in accordance with the requirements of paragraph (e)(2) of this section.

NOTE TO PARAGRAPH (e)(1). See paragraph (g) of this section for reclassification of a permit space after all hazards within the space have been eliminated.

(2) The following requirements apply to entry into permit spaces that meet the conditions set forth in paragraph (e)(1) of this section:

(i) Any conditions making it unsafe to remove an entrance cover must be eliminated before the cover is removed.

(ii) When entrance covers are removed, the opening must be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

(iii) Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the pre-entry testing required by this paragraph.

(iv) No hazardous atmosphere is permitted within the space whenever any employee is inside the space.

(v) Continuous forced air ventilation must be used, as follows:

(A) An employee must not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;

(B) The forced air ventilation must be so directed as to ventilate the immediate areas where an employee is or will be present within the space and must continue until all employees have left the space;

(C) The air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space.

(vi) The atmosphere within the space must be continuously monitored unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient. If continuous monitoring is used, the employer must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape. If continuous monitoring is not used, periodic monitoring is required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, must be provided with an opportunity to observe the testing required by this paragraph (e)(2)(vi).

(vii) If a hazard is detected during entry:

(A) Each employee must leave the space immediately;

(B) The space must be evaluated to determine how the hazard developed; and

(C) The employer must implement measures to protect employees from the hazard before any subsequent entry takes place.

(viii) The employer must ensure a safe method of entering and exiting the space. If a hoisting system is used, it must be designed and manufactured for personnel hoisting; however, a job-made hoisting system is permissible if it is approved for personnel hoisting by a registered professional engineer, in writing, prior to use.

(ix) The employer must verify that the space is safe for entry and that the pre-entry measures required by paragraph (e)(2) of this section have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification must be made before entry and must be made available to each employee entering the space or to that employee's authorized representative.

(f) When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the initial evaluation of the space may not have been adequate, each entry employer must have a competent person reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

(g) A space classified by an employer as a permit-required confined space may only be reclassified as a non-permit confined space when a competent person determines that all of the applicable requirements in paragraphs (g)(1) through (4) of this section have been met:

(1) If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated or isolated without entry into the space (unless the employer can demonstrate that doing so without entry is infeasible), the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated or isolated;

(2) The entry employer must eliminate or isolate the hazards without entering the space, unless it can demonstrate that this is infeasible. If it is necessary to enter the permit space to eliminate or isolate hazards, such entry must be performed under §§1926.1204 through 1926.1211. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated;

NOTE TO PARAGRAPH (g)(2). Control of atmospheric hazards through forced air ventilation does not constitute elimination or isolation of the hazards. Paragraph (e) of this section covers permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

(3) The entry employer must document the basis for determining that all hazards in a permit space have been eliminated or isolated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification must be made available to each employee entering the space or to that employee's authorized representative; and

(4) If hazards arise within a permit space that has been reclassified as a non-permit space under paragraph (g) of this section, each employee in the space must exit the space. The entry employer must then reevaluate the space and reclassify it as a permit space as appropriate in accordance with all other applicable provisions of this standard.

(h) *Permit space entry communication and coordination.* (1) Before entry operations begin, the host employer must provide the following information, if it has it, to the controlling contractor:

(i) The location of each known permit space;

(ii) The hazards or potential hazards in each space or the reason it is a permit space; and

(iii) Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space.

(2) Before entry operations begin, the controlling contractor must:

- (i) Obtain the host employer's information about the permit space hazards and previous entry operations; and
- (ii) Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:

- (A) The information received from the host employer;

- (B) Any additional information the controlling contractor has about the subjects listed in paragraph (h)(1) of this section; and

- (C) The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of employees in the permit spaces.

(3) Before entry operations begin, each entry employer must:

- (i) Obtain all of the controlling contractor's information regarding permit space hazards and entry operations; and

- (ii) Inform the controlling contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.

(4) The controlling contractor and entry employer(s) must coordinate entry operations when:

- (i) More than one entity performs permit space entry at the same time; or

- (ii) Permit space entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed.

(5) After entry operations:

- (i) The controlling contractor must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s) during entry operations;

- (ii) The entry employer must inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during entry operations; and

- (iii) The controlling contractor must apprise the host employer of the information exchanged with the entry entities pursuant to this subparagraph.

NOTE TO PARAGRAPH (h). Unless a host employer or controlling contractor has or will have employees in a confined space, it is not required to enter any confined space to collect the information specified in this paragraph (h).

(i) If there is no controlling contractor present at the worksite, the requirements for, and role of, controlling contractors in this section must be fulfilled by the host employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

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§1926.1204 Permit-required confined space program.

Each entry employer must:

- (a) Implement the measures necessary to prevent unauthorized entry;

(b) Identify and evaluate the hazards of permit spaces before employees enter them;

(c) Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

(1) Specifying acceptable entry conditions;

(2) Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces;

(3) Isolating the permit space and physical hazard(s) within the space;

(4) Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;

NOTE TO PARAGRAPH (c)(4). When an employer is unable to reduce the atmosphere below 10 percent LFL, the employer may only enter if the employer inertes the space so as to render the entire atmosphere in the space non-combustible, and the employees use PPE to address any other atmospheric hazards (such as oxygen deficiency), and the employer eliminates or isolates all physical hazards in the space.

(5) Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space;

(6) Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards;

(7) Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry, and ensuring that employees are not allowed to enter into, or remain in, a permit space with a hazardous atmosphere unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee; and

(8) Eliminating any conditions (for example, high pressure) that could make it unsafe to remove an entrance cover.

(d) Provide the following equipment (specified in paragraphs (d)(1) through (9) of this section) at no cost to each employee, maintain that equipment properly, and ensure that each employee uses that equipment properly:

(1) Testing and monitoring equipment needed to comply with paragraph (e) of this section;

(2) Ventilating equipment needed to obtain acceptable entry conditions;

(3) Communications equipment necessary for compliance with §§1926.1208(c) and 1926.1209(e), including any necessary electronic communication equipment for attendants assessing entrants' status in multiple spaces;

(4) Personal protective equipment insofar as feasible engineering and work-practice controls do not adequately protect employees;

NOTE TO PARAGRAPH (d)(4). The requirements of subpart E of this part and other PPE requirements continue to apply to the use of PPE in a permit space. For example, if employees use respirators, then the respirator requirements in §1926.103 (Respiratory protection) must be met.

(5) Lighting equipment that meets the minimum illumination requirements in §1926.56, that is approved for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present, and that is sufficient to enable employees to see well enough to work safely and to exit the space quickly in an emergency;

(6) Barriers and shields as required by paragraph (c)(4) of this section;

(7) Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;

(8) Rescue and emergency equipment needed to comply with paragraph (i) of this section, except to the extent that the equipment is provided by rescue services; and

(9) Any other equipment necessary for safe entry into, safe exit from, and rescue from, permit spaces.

(e) Evaluate permit space conditions in accordance with the following paragraphs (e)(1) through (6) of this section when entry operations are conducted:

(1) Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), the employer must:

(i) Perform pre-entry testing to the extent feasible before entry is authorized; and,

(ii) If entry is authorized, continuously monitor entry conditions in the areas where authorized entrants are working, except that employers may use periodic monitoring in accordance with paragraph (e)(2) of this section for monitoring an atmospheric hazard if they can demonstrate that equipment for continuously monitoring that hazard is not commercially available;

(iii) Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.

(2) Continuously monitor atmospheric hazards unless the employer can demonstrate that the equipment for continuously monitoring a hazard is not commercially available or that periodic monitoring is of sufficient frequency to ensure that the atmospheric hazard is being controlled at safe levels. If continuous monitoring is not used, periodic monitoring is required with sufficient frequency to ensure that acceptable entry conditions are being maintained during the course of entry operations;

(3) When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors;

(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;

(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 there is some indication that the evaluation of that space may not have been adequate; and

(6) Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accordance with this section.

(f) Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations:

(1) Attendants may be assigned to more than one permit space provided the duties described in §1926.1209 can be effectively performed for each permit space.

(2) Attendants may be stationed at any location outside the permit space as long as the duties described in §1926.1209 can be effectively performed for each permit space to which the attendant is assigned.

(g) If multiple spaces are to be assigned to a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of those permit spaces without distraction from the attendant's responsibilities under §1926.1209;

(h) Designate each person who is to have an active role (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by §1926.1207;

(i) Develop and implement procedures for summoning rescue and emergency services (including procedures for summoning emergency assistance in the event of a failed non-entry rescue), for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue;

(j) Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this standard, including the safe termination of entry operations under both planned and emergency conditions;

(k) Develop and implement procedures to coordinate entry operations, in consultation with the controlling contractor, when employees of more than one employer are working simultaneously in a permit space or elsewhere on the worksite where their activities could, either alone or in conjunction with the activities within a permit space, foreseeably result in a hazard within the confined space, so that employees of one employer do not endanger the employees of any other employer;

(l) Develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed;

(m) Review entry operations when the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized; and

NOTE TO PARAGRAPH (m). Examples of circumstances requiring the review of the permit space program include, but are not limited to: Any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program.

(n) Review the permit space program, using the canceled permits retained under §1926.1205(f), within 1 year after each entry and revise the program as necessary to ensure that employees participating in entry operations are protected from permit space hazards.

NOTE TO PARAGRAPH (n). Employers may perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.

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§1926.1205 Permitting process.

(a) Before entry is authorized, each entry employer must document the completion of measures required by §1926.1204(c) by preparing an entry permit.

(b) Before entry begins, the entry supervisor identified on the permit must sign the entry permit to authorize entry.

(c) The completed permit must 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.

(d) The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit in accordance with §1926.1206(b).

(e) The entry supervisor must terminate entry and take the following action when any of the following apply:

(1) Cancel the entry permit when the entry operations covered by the entry permit have been completed; or

(2) Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it; and

(3) Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is not covered by paragraph (e)(2) of this section.

(f) The entry employer must retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program required by §1926.1204(n). Any problems encountered during an entry operation must be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

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§1926.1206 Entry permit.

The entry permit that documents compliance with this section and authorizes entry to a permit space must identify:

(a) The permit space to be entered;

(b) The purpose of the entry;

(c) The date and the authorized duration of the entry permit;

(d) 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;

NOTE TO PARAGRAPH (d). This requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.

(e) Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working;

(f) Each person, by name, currently serving as an attendant;

(g) The individual, by name, currently serving as entry supervisor, and the signature or initials of each entry supervisor who authorizes entry;

(h) The hazards of the permit space to be entered;

(i) The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;

NOTE TO PARAGRAPH (i). Those measures can include, but are not limited to, the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.

(j) The acceptable entry conditions;

(k) The results of tests and monitoring performed under §1926.1204(e), accompanied by the names or initials of the testers and by an indication of when the tests were performed;

(l) The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services;

(m) The communication procedures used by authorized entrants and attendants to maintain contact during the entry;

(n) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this standard;

(o) Any other information necessary, given the circumstances of the particular confined space, to ensure employee safety; and

(p) Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

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§1926.1207 Training.

(a) The employer must provide training to each employee whose work is regulated by this standard, at no cost to the employee, and ensure that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard. This training must result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues, in the dangers of attempting such rescues.

(b) Training required by this section must be provided to each affected employee:

(1) In both a language and vocabulary that the employee can understand;

(2) Before the employee is first assigned duties under this standard;

(3) Before there is a change in assigned duties;

(4) Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained; and

(5) Whenever there is any evidence of a deviation from the permit space entry procedures required by §1926.1204(c) or there are inadequacies in the employee's knowledge or use of these procedures.

(c) The training must establish employee proficiency in the duties required by this standard and must introduce new or revised procedures, as necessary, for compliance with this standard.

(d) The employer must maintain training records to show that the training required by paragraphs (a) through (c) of this section has been accomplished. The training records must contain each employee's name, the name of the trainers, and the dates of training. The documentation must be available for inspection by employees and their authorized representatives, for the period of time the employee is employed by that employer.

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§1926.1208 Duties of authorized entrants.

The entry employer must ensure that all authorized entrants:

- (a) Are familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (b) Properly use equipment as required by §1926.1204(d);
- (c) Communicate with the attendant as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by §1926.1209(f);
- (d) Alert the attendant whenever:
 - (1) There is any warning sign or symptom of exposure to a dangerous situation; or
 - (2) The entrant detects a prohibited condition; and
- (e) Exit from the permit space as quickly as possible whenever:
 - (1) An order to evacuate is given by the attendant or the entry supervisor;
 - (2) There is any warning sign or symptom of exposure to a dangerous situation;
 - (3) The entrant detects a prohibited condition; or
 - (4) An evacuation alarm is activated.

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§1926.1209 Duties of attendants.

The entry employer must ensure that each attendant:

- (a) Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (b) Is aware of possible behavioral effects of hazard exposure in authorized entrants;
- (c) Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under §1926.1206(d) accurately identifies who is in the permit space;
- (d) Remains outside the permit space during entry operations until relieved by another attendant;

NOTE TO PARAGRAPH (d). Once an attendant has been relieved by another attendant, the relieved attendant may enter a permit space to attempt a rescue when the employer's permit space program allows attendant entry for rescue and the attendant has been trained and equipped for rescue operations as required by §1926.1211(a).

- (e) Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space under §1926.1208(e);
- (f) Assesses activities and conditions 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:

- (1) If there is a prohibited condition;
- (2) If the behavioral effects of hazard exposure are apparent in an authorized entrant;
- (3) If there is a situation outside the space that could endanger the authorized entrants; or
- (4) If the attendant cannot effectively and safely perform all the duties required under this section;

(g) Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;

(h) Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

- (1) Warns the unauthorized persons that they must stay away from the permit space;
 - (2) Advises the unauthorized persons that they must exit immediately if they have entered the permit space; and
 - (3) Informs the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;
- (i) Performs non-entry rescues as specified by the employer's rescue procedure; and

(j) Performs no duties that might interfere with the attendant's primary duty to assess and protect the authorized entrants.

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§1926.1210 Duties of entry supervisors.

The entry employer must ensure that each entry supervisor:

(a) Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

(b) 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;

(c) Terminates the entry and cancels or suspends the permit as required by §1926.1205(e);

(d) Verifies that rescue services are available and that the means for summoning them are operable, and that the employer will be notified as soon as the services become unavailable;

(e) Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and

(f) 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.

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§1926.1211 Rescue and emergency services.

(a) An employer who designates rescue and emergency services, pursuant to §1926.1204(i), must:

(1) Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;

NOTE TO PARAGRAPH (a)(1). What will be considered timely will vary according to the specific hazards involved in each entry. For example, §1926.103 (Respiratory protection) 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.

(2) Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;

(3) Select a rescue team or service from those evaluated that:

(i) Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;

(ii) Is equipped for, and proficient in, performing the needed rescue services;

(iii) Agrees to notify the employer immediately in the event that the rescue service becomes unavailable;

(4) Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and

(5) Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations.

(b) An employer whose employees have been designated to provide permit space rescue and/or emergency services must take the following measures and provide all equipment and training at no cost to those employees:

(1) Provide each affected employee with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train each affected employee so the employee is proficient in the use of that PPE;

(2) Train each affected employee to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required and establish proficiency as authorized entrants, as provided by §§1926.1207 and 1926.1208;

(3) Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR). The employer must ensure that at least one member of the rescue team or service holding a current certification in basic first aid and CPR is available; and

(4) Ensure that affected employees practice making permit space rescues before attempting an actual rescue, and 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, except practice rescue is not required where the affected employees properly performed a rescue operation during the last 12 months in the same permit space the authorized entrant will enter, or in a similar permit space. Representative permit spaces must, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

(c) Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The employer must designate an entry rescue service whenever non-entry rescue is not selected. Whenever non-entry rescue is selected, the entry employer must ensure that retrieval systems or methods are used whenever an authorized entrant enters a permit space, and must confirm, prior to entry, that emergency

assistance would be available in the event that non-entry rescue fails. Retrieval systems must meet the following requirements:

(1) Each authorized entrant must 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 or anklets 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 or anklets is the safest and most effective alternative.

(2) The other end of the retrieval line must 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 must be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 meters) deep.

(3) Equipment that is unsuitable for retrieval must not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other authorized entrants, or retrieval lines that will not work due to the internal configuration of the permit space.

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

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§1926.1212 Employee participation.

(a) Employers must consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by §1926.1203.

(b) Employers must make available to each affected employee and his/her authorized representatives all information required to be developed by this standard.

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§1926.1213 Provision of documents to Secretary.

For each document required to be retained in this standard, the retaining employer must make the document available on request to the Secretary of Labor or the Secretary's designee.

Appendix D

How to Use the BW Gas Alert Micro Clip

Appendix E

Forms Used For This Program

Permit Required Confined Space Evaluation and Entry Procedure

Confined Space: _____ Qualifies For:

Location: _____ Alternative Procedures:

Dimensions: _____ Reclassification:

Activity: _____

Potential Hazards	Hazard Control Measures	Equipment	Acceptable Conditions
<u>Atmospheric:</u> Low Oxygen Content	Monitor atmosphere for oxygen. Open all accesses. All boilers shut down according to shut down procedures. Ventilate if air monitoring indicates a hazardous atmosphere.	Air monitor Lockout devices for boilers. Copous Blower if needed.	Oxygen: 19.5%-23.5% Carbon Monoxide: <17 PPM
<u>Mechanical/Electrical:</u> Inadvertent boiler operation. Operation of inlet lines.	Complete shutdown of all boilers. Lockout transfer pumps. Lockout steam valves and disconnect at the flange or blank at the flange.	Lockout devices for boilers, transfer pumps and steam valves. Blanks for flanges.	After all lockouts and disconnects have been made try operation of system to ensure isolation of the tank.
<u>Engulfment:</u> None			
<u>External:</u> None			
<u>Other:</u>	Provide adequate	Light source	

Low levels of illumination	light source		
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Confined Space Evaluation Form

Section I	Space Description:	Date:	
	Specific Location:		
Section II	Confined Space Identification:	Yes	No
	1. Is the space large enough and shaped so that the employee can enter and move?		
	2. Does the space have a limited or restricted means of ingress or egress?		
	3. Is the space NOT designed for continuous employee occupancy?		
If ANY answer in Section II is " NO " proceed to Section IV and mark the "Not A Confined Space" box, sign as the evaluator, and give this form to the Confined Space Competent Person. If ALL answers in Section II are " YES ", proceed to Section III.			
Section III	Confined Space Evaluation:	Yes	No
	1. Does the space contain, or have the potential to contain either through processes inherently within the space or introduced through work activities during entry (e.g., hot work), a hazardous atmosphere? (e.g., oxygen deficiency, flammable vapors or dusts, toxic gases or dusts, volatile chemicals, or other hazardous substance). If yes, specify known or potential hazards:		
	2. Does the space contain a material with the potential for engulfment of a worker? (e.g., grain, sand, or water) If yes, specify known or potential hazards:		
	3. Does the space have an internal shape such that a worker could be trapped or suffocated by inwardly converging walls, floor, or ceiling? If yes, specify known or potential hazards:		
	4. Does the space contain, or have the potential to contain, any other recognized safety or health hazards? (e.g., mechanical, exposed electrical wires, energized equipment, gas or chemical lines, elevated work, temperature extremes, noise, biological, radioactivity) If yes, specify known or potential hazards:		
	5. Is this space represented as a Special Procedures through use of Standard Operating Procedures for entry?		
Section IV	Confined Space Classification:	√ Applicable	
	1. If ANY answers in Section II are " NO ", then this is Not A Confined Space .		
	2. If ALL answers in Section III are " NO ", then this is a Non-Permit Required Confined Space .		
	3. If ONLY question 1 in Section III is " YES " and the atmospheric hazard CAN be controlled through use of forced air ventilation, then this is an Alternate Entry Procedures space.		
	4. If question 1 in Section III is " YES " and the atmospheric hazard CAN be controlled through the use of forced air ventilation and if any of questions 2, 3, or 4 are " YES " and CAN be eliminated, then this is an Alternate Entry Procedures space.		
	5. If question 1 in Section III is " YES " but the atmospheric hazard CAN NOT be controlled through use of forced air ventilation or if any of questions 2, 3, or 4 are " YES " but CAN NOT be eliminated, then this is a Permit Required Confined Space .		
	6. If question 5 in Section III is " YES ", then this is a Special Procedures space.		
Last	Certification:		
	I certify that I have evaluated this space including all known and potential hazards, and have classified it accordingly based on my evaluation.		
	Sign Name Date	Print Name	Phone#

I certify that I have reviewed this Confined Space Evaluation Form and have verified that this space has been properly classified.

Sign Name
Date

Print Name

Phone#

