



CONFINED SPACE ENTRY PROGRAM (Section 4)

PURPOSE:

The purpose of this program is to protect the employees of Wagner-Meinert Inc. who must enter into, work in and exit from confined spaces from the risk of exposure to serious hazards such as entrapment, engulfment and hazardous atmospheric condition. This permit-required confined space program is available for inspection by employees, and customers of Wagner-Meinert Inc.

SCOPE:

This Confined Space Entry Program is intended to apply to all confined spaces at all times. This procedure applies to any change in the facility that may create either by construction of administration, any type of confined space.

This Program specifically covers those procedures necessary to evaluating and identifying potential confined spaces, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for employees, identify the training requirements, and those procedures necessary to assure safe confined space entry.

DOCUMENTS

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RELATED DOCUMENTS

**Hot Work Permit Program
Lockout Tagout Program**

REFERENCES:

- A) 29 CFR 1910.146 Process Safety Management of Permit-required confined spaces.
- B) Part 1926--Safety And Health Regulations For Construction

PROCEDURES:

Wagner-Meinert, Inc. Permit-Required Confined Space Entry Program is composed of written procedures for each of the elements of the program, including:

- 1.0 COORDINATION WITH HOST EMPLOYER**
- 2.0 NON-PERMIT CONFINED SPACE**
- 3.0 PERMIT-REQUIRED CONFINED SPACE:**
- 4.0 PROCEDURE FOR IDENTIFYING CONFINED SPACES**
- 5.0 PREPARATIONS FOR ENTRY INTO PERMIT SPACE**
- 6.0 PRE-ENTRY TESTING OF CONFINED SPACE**
- 7.0 PREPARING THE ENTRY PERMIT**
- 8.0 TRAINING AND EDUCATION**
- 9.0. RESCUE AND EMERGENCY SERVICES**

1.0 COORDINATION WITH HOST EMPLOYER

1.1 When employees of Wagner-Meinert Inc. are to work in facilities containing confined space(s) that are controlled by the host employer, the authorized representative of Wagner-Meinert Inc. shall coordinate all confined space entry requirement with a properly authorized representative of the host employer. As a minimum, the following information shall be exchanged/determined:

1.1.1 The host employer shall appraise the Wagner-Meinert Inc. representative of all elements including the hazards identified in the confined space; the experiences that the host employer has had with the space and the reason(s) why a space is classified as a permit required confined space.

1.1.2 Any precautions or procedures that have been implemented by the host employer for the protection of their employees in or near the confined space area where employees of Wagner-Meinert Inc. will be working.

- 1.1.3 Coordinate all entry operations to protect both the host employer employees and employees of Wagner-Meinert Inc. or employees of other contractors who are working near the confined space to be entered. If host employer employees, employees of another contractor and employees of Wagner-Meinert Inc. are to work in the confined space simultaneously, entry procedures shall be developed and implemented to ensure the safety of all authorized entrants, and to ensure that employees of one employer do not endanger the employees of another employer.
- 1.1.4 The authorized representative of Wagner-Meinert Inc. shall obtain from the host employer any available information regarding the permit space hazards and any entry operations mandated by the host employer. Further, the authorized representative of Wagner-Meinert Inc. shall provide a copy of the Wagner-Meinert Inc. confined space program to the host employer for their review and approval before any entry operation is performed by any employee of Wagner-Meinert Inc. or subcontractors employed by Warner-Meinert Inc. Approval to use the Wagner-Meinert Inc. confined entry program as is, or as modified by special requirements of the host employer, shall be in writing and shall be signed by an authorized representative of the host employer.
- 1.1.5 The authorized representative of Wagner-Meinert Inc. shall debrief the host employer at the conclusion of the entry operation regarding the permit space program followed, and of any hazards encountered or created in the permit spaces during entry operations and actions taken to protect the safety of the assigned entry personnel.

1. *For the purpose of this program, "confined space" is divided into two categories as follows:*

2.0 NON-PERMIT CONFINED SPACE

- 2.1 This type of confined space usually does not contain or have the potential to contain or, with respect to atmospheric hazards, have the potential to contain any hazards which are capable of causing death or serious physical harm.
 - 2.1.1 Is large enough and so configured that an employee can bodily enter and perform assigned work.
 - 2.1.2 Has limited or restricted means for entry or exit such as tanks, vessels, silos, storage bins, hoppers, vaults and pits.
 - 2.1.3 Is not designed for continuous employee occupancy.

3.0 PERMIT-REQUIRED CONFINED SPACE:

3.1 This type of confined space has all the characteristics of a non-permit required confined space and one or more of the following other characteristics:

3.1.1 Contains or has a potential to contain a hazardous atmosphere.

3.1.2 Contains material that has the potential for engulfing an entrant.

3.1.3 Has an internal configuration which would cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section.

3.1.4 Contains any other recognized serious safety and health hazard.

4.0 PROCEDURE FOR IDENTIFYING CONFINED SPACES

4.1 The Wagner-Meinert, Inc. has designated the job-site foreman and project manager as representatives to evaluate each workplace to determine the existence and type of confined space in the areas where employees of Wagner-Meinert Inc. will be working.

4.2 Before employees of Wagner-Meinert Inc. are allowed to begin work, the designated representative of Wagner-Meinert Inc., shall coordinate with the authorized representative of the owner or the general contractor to evaluate the job-site and to determine the type of confined space(s) that exist in the work area.

4.3 If permit required spaces are found to exist, the Wagner-Meinert Inc. designated representative will make a note of the exact location of this space and post or have posted danger signs, or identify the manner in which this space is already posted. A typical sign stating:

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

or using other similar language would satisfy the requirements for a sign.

4.4 If employees of Wagner-Meinert Inc. will not be required to enter confined spaces in the course of their work. They will be briefed by an on-site representative on the location of permit-required confined space(s) in their work area, the manner in which these areas are posted and that they will not, under any circumstances, enter into the confined space(s).

4.5 If the employees of Wagner-Meinert Inc. will enter permit-space(s), they will do so by following the procedures outlined in this permit-required confined space program.

- 4.6 If the documented test data show that the only hazard posed by the space is an actual or potential hazardous atmosphere that can be controlled within the specified safety criteria stated above, through continuous forced air ventilation alone, requirements for permit space entry will not have to be enforced and the space may be entered under procedures as outlined in Non-Permit Confined Space Entry Program.

5.0 PREPARATIONS FOR ENTRY INTO PERMIT SPACE

- 5.1 Before entry into a permit space is authorized the authorized representative of Wagner-Meinert Inc. shall:

- 5.1.1 Implement all measures necessary to prevent unauthorized entry.
- 5.1.2 Identify and evaluate the hazards that may be encountered in the permit space.
- 5.1.3 Specify acceptable entry conditions.
- 5.1.4 Conduct preliminary purging, inerting, flushing or ventilating of the permit space as appropriate to eliminate or control atmospheric hazards.
- 5.1.5 Provide barriers to control pedestrian and vehicle traffic to protect the entrants from external hazards.
- 5.1.6 The authorized representative of Wagner-Meinert Inc. shall ensure that necessary equipment is available on location, that the equipment is in proper operating conditions and that personnel operating/using the equipment have been properly trained. Whatever equipment is deemed necessary will be provided via Permit Required Confined Space Permit.

Testing and Monitoring Equipment

- 5.2 Various types of instruments are available for determining the presence of dangerous gases. The instruments should not be taken into the confined space that may contain hazardous gases; rather, sampling lines(probes) should be used. Some of the more familiar test instruments are as follows:
- 5.2.1 Oxygen deficiency indicator - This instrument measures oxygen content to determine if it is sufficient to support life.
- 5.2.2 Combustible gas indicator - This instrument registers the explosibility of the mixture of gas and air.

- 5.2.3 Carbon monoxide detector - This instrument gives a reading of the carbon monoxide present in the confined space.
- 5.2.4 Hydrogen sulfide detector - This instrument consists of a detecting container which is lowered into the confined space. A color chart is used to compare the color of the container sample to determine if hydrogen sulfide gas is present.
- 5.2.5 Anhydrous Ammonia detectors - This instrument consists of a detecting container which is put into the area of ammonia spill or leak to determine the PPM levels in the area. Draw pump tubes can be used or the Manning Electronic Detector.
- 5.2.6 Employees of Wagner-Meinert Inc. who are designated to use testing or monitoring equipment shall be properly trained to know the type of gas that may be encountered in typical confined spaces and how to properly use the gas detection equipment.

NOTE: All testing equipment must be calibrated according to manufacturer's specifications before use.

Communication Equipment

- 5.3 Appropriate communications equipment shall be used to maintain contact between authorized entrants and the attendant, to monitor the status of the entrant(s) and to alert them if the need arises for them to evacuate the space. The type of communications shall be based on the conditions in the permit space and may include one of the following:
 - 5.3.1 Visual (observation)
 - 5.3.2 Voice
 - 5.3.3 Telephone
 - 5.3.4 Two-way radio
 - 5.3.5 Other means as appropriate

Ventilation Equipment

- 5.4 Ventilating by a blower or fan may be necessary to remove harmful gases and vapors from a confined space. The method used and the equipment selected is dependent on:
 - 5.4.1 The size of the confined space openings
 - 5.4.2 The gases to be exhausted

5.5.3 The source of the makeup air

5.5.4 A common method of ventilating a space is to use a large hose with one end attached to a fan and the other end lowered into the confined space. The ventilating hose end shall be located at the bottom of the confined space to blow out all harmful gases and vapors. The air intake shall be placed in an area **that will draw in fresh air only**. Ventilation shall be continuous to keep hazardous atmospheres from reforming.

Personal Protective Equipment

5.6 To protect personnel of Wagner-Meinert Inc. from becoming injured while entering, performing the required work and safely exiting the confined space, necessary personal protective equipment shall be maintained and provided by Wagner-Meinert Inc. to personnel involved in confined space work at no cost to the employee. There are certain basic protective equipment that should be worn at all times to include:

5.6.1 Head protection

5.6.2 Eye and face protection

5.6.3 Hand and foot protection

5.6.4 In certain conditions, there may be a need for protective clothing, hearing protection, respiratory protection and body harness.

5.6.5 Before an employee of Wagner-Meinert Inc. enters any confined space, the interior of the space shall be evaluated for the type hazards that may be present in the space and appropriate personal protective equipment shall be issued.

Lighting Equipment

5.7 Appropriate lighting shall be provided within and outside the confined space to allow employees to enter safely, perform the required work and exit the confined space. Some of the precautions that shall be taken when selecting lighting are as follows:

5.7.1 All personnel entering the confined space shall be provided with explosion-proof flashlights.

5.7.3 Extension cords in damp or wet areas could cause electric shock hazards. Only approved low-voltage lights with ground fault circuit interrupters will be used in confined spaces.

Barrier and Shields

5.8 Appropriate barriers and shields shall be used to isolate the confined space from personnel who are not directly involved in the entry operations. High visibility warning tape may be used to keep unauthorized personnel at a safe distance. If the confined space is located in an area accessible to public, barriers that keep pedestrian and vehicular traffic away from the entry operation shall be erected.

5.8.1 Before the entrance cover to the confined space is removed, the area around the entrance shall be inspected and all unsafe conditions eliminated.

5.8.2 Immediately after removal of the entrance cover, the opening shall be guarded by a railing, temporary cover or other type of barrier as appropriate that will prevent an accidental fall through the opening and to protect employee(s) working in the space from objects that may fall into the space.

Entry and Exit Equipment

5.9 Ladders and other types of equipment that provide safe entry and exit to the authorized entrants from the confined space shall be available at the entry location. Necessary precautions shall be taken to ensure that this equipment does not interfere with the ventilating equipment.

Rescue and Emergency Equipment

5.10 Work/rescue equipment, including lifelines, belts, stretchers, mobile cranes, hoists or other suitable equipment needed to rescue an individual from the confined space shall be available at all times. Since the equipment characteristics vary from one situation to another, the necessary equipment shall be selected based on the potential hazards and possible contingencies expected to occur during the entry operations.

A properly trained attendant shall be positioned outside the permit space to observe the status of the entrants. The attendant shall be equipped with a two-way radio or have immediate access to a telephone so he/she can summon rescue and emergency services.

Welding

5.11 All welding shall be done in accordance with all applicable codes and standards. Safe guards for individual confined space entries shall be evaluated on a per-case basis by the foreman and project manager.

6.0 PRE-ENTRY TESTING OF CONFINED SPACE

6.1 Pre-Entry Testing

6.1.1 Before any type of confined space (permit or non-permit) is entered into by employees of Wagner-Meinert Inc. The space shall be tested with a calibrated, direct reading instrument to determine if acceptable entry conditions exist.

6.1.2 If a permit space is large or is part of a continuous system (i.e. a sewer), pre-entry testing shall be performed to the extent feasible, and if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entry personnel are working.

6.2. When testing for atmospheric hazards, it shall be done in the order shown (i.e. oxygen concentration, combustible gases and vapors, and toxic gases and vapors).

6.2.1 Atmospheric oxygen concentration

CRITERIA: Not below 19.5 percent or in excess of 23.5 percent.

6.2.2 Flammable gas vapor or mist

CRITERIA: Not to exceed 10 percent of its lower flammable limit (LFL).

6.2.3 Airborne combustible dust that meets or exceeds its lower flammable limit (LFL).

CRITERIA: Not to exceed 10 percent of its lower flammable limit (LFL).

6.2.4 Anhydrous Ammonia.

CRITERIA:	OSHA PEL	50 ppm
	NIOSH REL	25 ppm(TWA)
	ACGIH TLV	35 ppm(STEL)
	IDLH	300 ppm

6.2.5 Atmospheric concentration of any substance for which a dose or permissible exposure limit is published and which could result in employee exposure in excess of the dose or permissible exposure limit

CRITERIA: Refer to Subpart C, Occupational Environmental Control, and Subpart3, Toxic and Hazardous substances in OSHA Safety and Health Standards (29 CUR 1910) for exposure limits.

6.3 Isolating Energy Sources

6.3.1 Before any confined space is entered by employees of Wagner-Meinert Inc. or their subcontractors, the space shall be removed from service and shall be completely protected against the release of energy and/or material(s) into the space. This means that all energy sources leading to the confined space or located within the confined space which are potentially hazardous to the workers shall be locked out, tagged, relieved, disconnected; and/or restrained. Energy sources include:

6.3.1.1 Electrical

6.3.1.2 Mechanical

6.3.1.4 Hydraulic

6.3.1.5 Thermal Radioactive Sources

6.3.1.6 Gravity

6.3.2 The objective for isolating all energy sources is to prevent unexpected or accidental energization, start-up or release of stored energy that could cause injury to workers within the confined space.

6.4 Fire Protection

6.4.1 To preclude the possibility of fires occurring in the confined space that could become a hazard to the workers inside, the following precautions shall be taken as a minimum:

6.4.1.1 Access and egress to and from the confined space shall be maintained clear of any obstructions at all times. If welding or cutting is to be performed in the confined space, combustible materials shall be removed or covered with flame-retardant materials.

6.4.1.2 Flammable liquids (i.e. acetone, alcohol, etc.) shall be stored in UL or FM approved containers. The amount of flammable liquid(s) brought into the confined space shall not exceed the amount needed to perform the work each day.

6.4.1.3 Properly rated fire extinguishers shall be immediately available.

6.4.1.4 Cylinders containing oxygen, acetylene or other fuel gases shall not be taken inside the confined space.

6.4.1.5 All rags, brushes, wipes, gloves, etc., shall be stored in metal containers with lids.

- 6.4.1.6 A person shall be posted during all welding, burning and heating operations to monitor for fires, and ensure that after the work has ceased or at the end of a work shift there are no fire conditions present.
- 6.4.1.7 All flammable gas equipment, hoses, torches, etc., shall be free of defects and inspected by the user prior to such operations or are adequately protected to prevent ignition.
- 6.4.1.8 To eliminate the possibility of fire in enclosed spaces as a result of gas escaping through leaking or improperly closed torch valves, the gas supply to the torch shall be positively shut whenever the torch is left unattended for long periods of time, such as during lunch breaks. At the end of a work shift, the torch and hose shall be removed from the confined or enclosed space. Open end

fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.

6.5 Evacuating a Permit Space

- 6.5.1 Should a situation occur where a hazardous condition develops, the authorized entrant(s) shall immediately notify the attendant that the space is being abandoned. The attendant shall notify the rescue services and assist the authorized entrants in any way possible. **It is important that the attendant not enter the permit space.**

6.6 Closing Permit Space and Canceling of Permit

- 6.6.1 The permit space entry supervisor/foreman shall consult with the authorized entrants to determine the cause of the hazardous situation and identify any actions taken by the entrants that could have caused the situation to develop. Before further entry is attempted, a new permit shall be prepared which corrects any deficiencies found in the original permit. The original permit shall be canceled by having the entry supervisor/foreman sign and date in the cancellation space on the permit.

7.0 PREPARING THE ENTRY PERMIT (Appendix 4B)

- 7.1 An entry permit shall be prepared to authorize entry into any permit required space by employees of Wagner-Meinert Inc.. An entry supervisor/foreman shall be designated by Wagner-Meinert Inc. for each specific confined space entry operation. The entry supervisor/foreman shall be the only person that can sign the entry permit to authorize entry.

- 7.2 The entry permit used by Wagner-Meinert Inc. shall include the following information:
- 7.2.1 Description of the confined space to be entered.
 - 7.2.2 The purpose of the entry and known space hazards.
 - 7.2.3 The date and the authorized duration of the entry.
 - 7.2.4 The names of all authorized entrants, eligible attendant(s) and the name(s) of the individual(s) designated as entry supervisor/foreman(s). If the individual serving as entry supervisor/foreman is someone other than the entry supervisor/foreman who originally authorized entry, space for the names of both entry supervisor/foremans and their signatures shall be provided.
 - 7.2.5 The measures to be taken to isolate the permit space to eliminate or control permit space hazards (i.e. locking out or tagging of equipment and procedures for purging, making inert, ventilating, flushing, etc.).
 - 7.2.6 Statement as to what constitutes acceptable entry conditions.
 - 7.2.7 The results of initial and periodic tests performed, together with the names or initials of the individuals doing the test and the time when the test was conducted.
 - 7.2.8 The rescue and emergency services that are to be summoned, the means (i.e. telephone, etc.) and the number(s) to be called to summon these services.
 - 7.2.9 The communication procedures to be used by the authorized entrants and the attendant to maintain contact during entry.
 - 7.2.10 Personal protective equipment used by entrants, testing and monitoring equipment used, alarm system and rescue equipment that will be available on site.
 - 7.2.11 Additional permits, i.e. hot work, etc., that have been issued for work inside the space.
 - 7.2.12 Any other information pertinent to a specific confined space to ensure employee safety.
- 7.3 The completed permit shall be made available at the time of entry to all authorized entrants. This shall be accomplished by posting the permit at point of entry and by reviewing and signing the permit with all entrants so that they are made aware that all pre-entry preparations have taken place.

- 7.4 The duration of the entry permit must not exceed the time required to complete the assigned task or job identified on the permit.
- 7.5 If hazardous conditions are detected during entry, employees of Wagner-Meinert Inc. and their subcontractors must immediately leave the space and the space must be evaluated to determine the cause of the hazardous condition.
- 7.6 The entry supervisor/foreman shall terminate entry and cancel the entry permit when:
 - 7.6.1 The entry operations covered by the permit have been completed.
 - 7.6.2 A condition arises which is not covered under the permit. The circumstances of the situation must be noted on the canceled permit and should be used in revising the permit space program.
- 7.7 The Wagner-Meinert Inc. shall retain a canceled permit for at least five years. The permit is to be filed in the permanent job file and with the Safety Director.
- 7.8 A sample copy of a permit-required confined space entry permit is included as Appendix 4B.

8.0 TRAINING AND EDUCATION

- 8.1 The Wagner-Meinert Inc. will provide proper training to all its employees before their initial work assignment in a permit space.
- 8.2 Upon completion of this training, Wagner-Meinert Inc. will have all individuals who participated in the training sign to ensure that they understand and have the necessary knowledge and skills for the safe performance of their duties. Additional training will be given yearly or when:
 - 8.2.1 The job duties change.
 - 8.2.2 There is a change in the permit space program or the permit space presents a new hazard.
 - 8.2.3 When the job performance of any employee shows deficiency.
- 8.3 Training will also be given free of charge to interested employees to include CPR and first aid training. Upon completion of training the Training Instructor will issue certificate of training to those employees who successfully completed the training. The certificate will include the employee's name, signature and initial(s) of the trainer(s), the date(s) of training and the certificate expiration date.

- 8.4 Instructors conducting the training shall be competent in permit-required confined space entry either through education or experience. They shall further have thorough knowledge of confined spaces, hazards associated with toxic atmospheres, monitoring equipment, personal protective equipment and emergency rescue planning. Instructors shall also be knowledgeable in blinding and purging operations, lockout/tagout procedures, ventilation and toxicological effects.
- 8.5 Appendix 4A provides the training outline to be followed in the initial training of Wagner-Meinert Inc. employees. Considering the fact that there are a large variety of confined spaces with their own unique requirements, the employees of Wagner-Meinert Inc. shall receive additional instructions from the job site foreman that covers the specifics of a particular permit space prior to entry into the space.

9.0. RESCUE AND EMERGENCY SERVICES

- 9.1 Wagner-Meinert Inc. will have one individual available at the job site where permit space entry is to take place to provide rescue services. This individual will be the job foreman in charge of the entry operation. A qualified attendant will be provided for each confined space if multiple spaces are being monitored.
- 9.2 The individual designated to provide rescue services shall be provided with personal protective equipment and other rescue equipment necessary to make rescues from permit space. This individual shall be trained in the use of the personal protective equipment and shall hold a current certification in CPR and first aid.
- 9.3 The job sites in a host employer facility, the Wagner-Meinert Inc. job site foreman shall coordinate with the host employer and identify the rescue equipment that needs to be available at the permit space and establish procedures that are to be followed in case rescue becomes necessary.
- 9.4 In cases where the Wagner-Meinert Inc. foreman is required to enter the permit space to perform rescue, he/she shall be equipped with a chest or full body harness with a retrieval line attached at the center of the back rear shoulder level or above the head. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in a manner that will allow rescue to begin immediately. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than five (5) feet deep.
- 9.5 The Wagner-Meinert Inc. foreman shall receive the same training as the entry personnel. The rescue service person shall also practice making a simulated rescue from typical permit space(s) where Wagner-Meinert Inc. personnel may have to work.
- 9.6 Where an entrant is exposed to a substance in the permit space that will require treatment at a medical facility, a copy of the MSDS for that substance will be

provided to the treatment facility. Copies of all reports shall be filed with the Foreman, Project Manager and Safety Director.

DOCUMENT MANAGEMENT:

The Safety Director is responsible for developing and maintaining the program. Employees may review a copy of the plan by requesting one from the Safety Director. In addition, the Safety Director is responsible for maintaining any records related to the Confined Space Entry Program. All completed confined space entry permits are kept with the job files and kept on file for review for any problems for making appropriate changes to the program.

If after reading this program, you find that improvements can be made, please contact the Safety Director. We encourage all suggestions because we are committed to the success of our written Confined Space Entry Program. We strive for clear understanding, safe behavior, and involvement from every level of the company.

CHANGE CONTROL:

All management system changes are reviewed yearly, approved or disapproved by the Safety Committee.

This program was initially developed on September 13, 2000, replacing the former Confined Space Entry Program entirely.

Revision No. 1 (September 13, 2000)
Revision or Review No. 2 (January 15, 2001)
Revision or Review No. 3 (January 10, 2002)
Revision or Review No. 4 (January 11, 2003)
Revision or Review No. 5 (January 15, 2004)
Revision or Review No. 6 (October 8, 2004)
Revision or Review No. 7 (December 16, 2004)
Revision or Review No. 8 (January 10, 2005)
Revision or Review No. 9 (January 3, 2006)
Revision or Review No. 9 (June 26, 2006)
Revision or Review No. 10 (September 6, 2007)
Revision or Review No. 11 (January 6, 2010)

PERSONNEL:

The Owners of Wagner-Meinert, Inc. have the ultimate responsibility for the Confined Space Entry Program. They have designated the Safety Director to manage the Confined Space Entry Program.

Confined Space Entry Training (Appendix 4A)



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1.0 Duties of Authorized Entrants (Will be trained in:)

- 1.1 The hazard(s) they may face during entry.
- 1.2 How to properly use the equipment provided to them.
- 1.3 Communicate with the entry attendant as necessary
- 1.4 Alert the entry attendant when hazard warning signs or prohibited conditions occur.
- 1.5 Exit the space immediately when ordered by the attendant/supervisor to do so.
- 1.6 Exit the space immediately when hazard warning signs occur.
- 1.7 Exit the space immediately when prohibited conditions become evident.
- 1.8 Exit the space immediately when an evacuation alarms sounds.

2.0 Duties of Attendants (Will be trained in:)

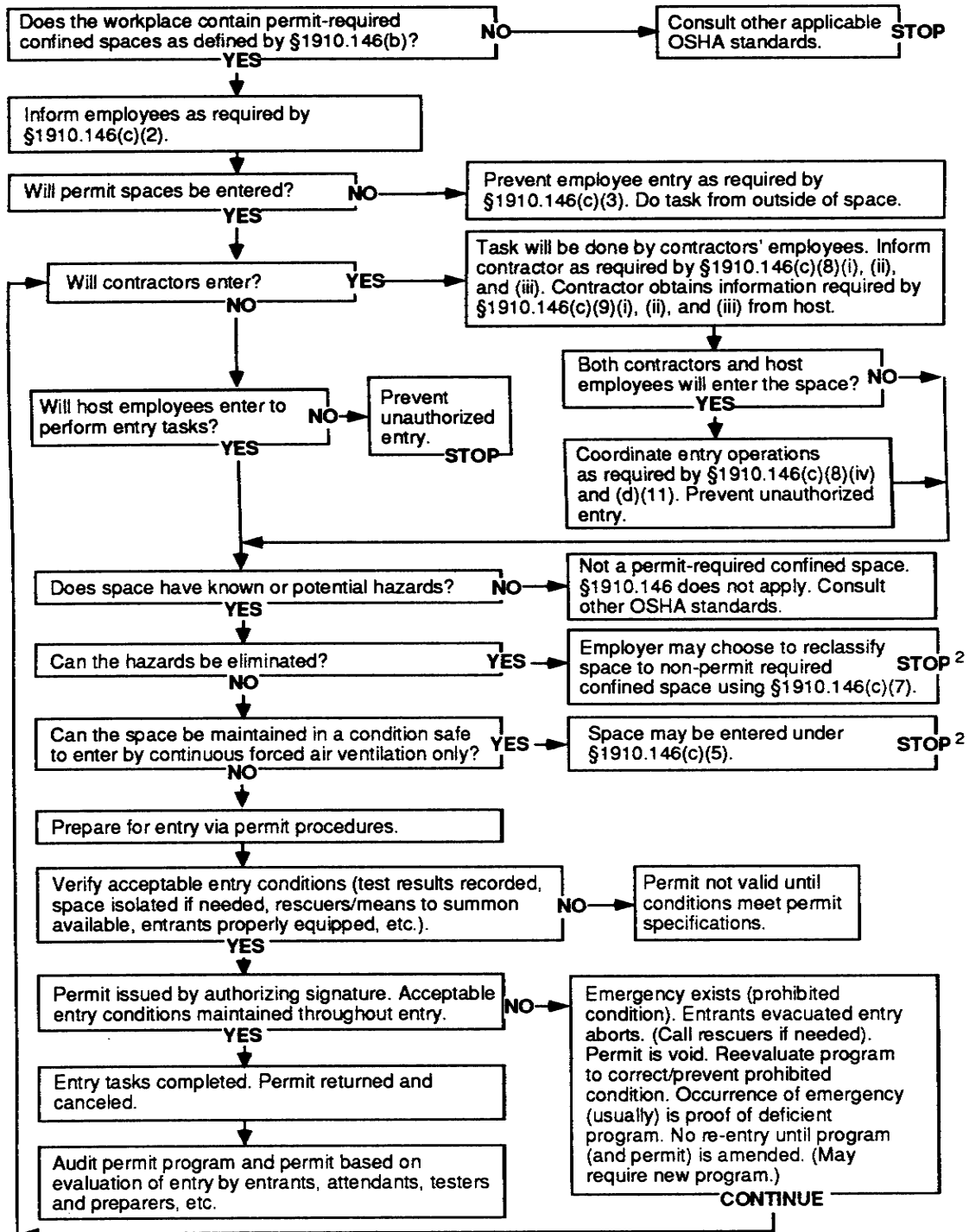
- 2.1 Knows the hazard(s) that entrants may face during entry.
- 2.2 The behavioral effects of hazard exposure.
- 2.3 How to maintain an accurate system to identify, count, and keep track of entrants.
- 2.4 Will remain outside the Permit Required Confined Space until relieved by another attendant.
- 2.5 To communicate with entrants as necessary.
- 2.6 Monitors activities inside and outside the space to ensure the space remains safe.
- 2.7 Orders evacuation when:
 - 2.7.1 A prohibited condition occurs.

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2.7.2 Detects behavioral effects of hazard exposure.

2.7.3 A situation outside the space endangers the entrants.

Permit-Required Confined Space Decision Flow Chart



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

²Spaces may have to be evacuated and re-evaluated if hazards arise during entry.

Confined Space Entry Permit (Appendix 4B)(Post at Point of Entry)



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Date and Time Issued _____ Date and Time Expires: _____
 Job site: _____ Job Supervisor/Foreman: _____
 Equipment to be worked on: _____ Work to be performed: _____

Entry Supervisor/Foreman (please print) _____
 Authorized Entrant(s) (please print) _____
 Authorized Attendant(s) (please print) _____
 Backup Personnel (please print) _____

1. Atmospheric Checks:

Time	_____	
Oxygen	_____	%
Explosive	_____	% L.F.L.
Toxic	_____	PPM

1a. Testers Signature: _____

2. Source isolation (No Entry):

Pumps or lines blinded, disconnected, or blocked	N/A	Yes	No
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3. Ventilation Modification:

Mechanical	N/A	Yes	No
Natural Ventilation only	N/A	Yes	No

4. Atmospheric check after isolation and ventilation

Oxygen _____% >19.5%
 Explosive _____ L.F.L. <10%
 Toxic _____ PPM <10PPM H (2) S
 Time _____

4a. Testers Signature: _____

5. Communication Procedures: _____

6. Rescue Procedures: _____

7. Entry, standby, and backup persons:

Successfully completed required training	Yes	No
Is it current?	Yes	No

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8. Equipment:

Direct reading gas monitor tested	N/A	Yes	No
Safety harnesses and lifelines for entry and standby persons	N/A	Yes	No
Hoisting equipment	N/A	Yes	No
Powered communications	N/A	Yes	No
SCBA's for entry and standby persons	N/A	Yes	No
Protective Clothing	N/A	Yes	No
All electric equipment listed, Class I, Division I, Group D and Non-sparking tools	N/A	Yes	No

9. Periodic Atmospheric Test:

Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____
Oxygen: _____%	Explosive _____%	Toxic: _____%	Time: _____

We have reviewed the work authorized by this permit and the information contained herein. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Authorized Entrant(s) (signature(s)) _____

Authorized Attendant(s) (signature(s)) _____

Backup Personnel(signature(s)) _____

Permit and Check List Prepared By: (Entry Supervisor/Foreman) _____

Approved and Review By: (Authorized Site Supervisor/Foreman) _____

This permit to be posted at entry location at job site. At job completion. Make copy for Site Supervisor/Foreman. Return job site original to Job Site Foreman and turn in to Project manager to be file with the job file.

Copy: (Project Manager)

Confined Space Pre-Entry Checklist (Appendix 4C)(Post at Point of Entry)



1.	Unsafe conditions for removing an entrance cover are eliminated.	Yes	No
2.	Entrance openings are guarded to prevent workers and objects from falling into the space.	Yes	No
3.	Oxygen content tested and suitable for entry.	Yes	No
4.	Flammable gases and vapors tested and space suitable for entry.	Yes	No
5.	Potential toxic air contaminants tested and space suitable for entry.	Yes	No
6.	Forced-air ventilation has eliminated any hazardous atmosphere.	Yes	No
7.	Forced-air ventilation ventilates the immediate area where work is performed.	Yes	No
8.	Forced-air ventilation continues until all workers have left the space.	Yes	No
9.	All test results are documented.	Yes	No
10.	Air supply for the forced-air ventilation is clean and does not increase hazards in the space.	Yes	No
11.	Atmosphere inside the space is periodically tested as necessary.	Yes	No
12.	The employer has taken the required pre-entry procedures through a written certification process.	Yes	No
13.	Certification includes date, location of space and the signature of the certifying person.	Yes	No
14.	The emergency phone number list has been established.	Yes	No
15.	The employer has verified that the space is safe for entry.	Yes	No

Contact rescue personnel by local fire department in the event of an emergency.

Notice: If any of the above questions are answered "no" do not enter. Contact your immediate supervisor.

Job Location _____

Entry Supervisor/Foreman Signature: _____ Date: _____

Confined Space Atmospheric Testing Procedure (Appendix 4D)



Atmospheric testing is required for two distinct purposes:

1. Evaluation of the hazards of the permit space.
2. Verification that acceptable conditions exist for entry into that space.

(1) Evaluation testing: The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data and development of the entry procedure should be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist,¹ registered safety engineer, certified safety professional) based on evaluation of all serious hazards

(2) Verification testing: The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Testing order should be oxygen, flammables, and then toxics. Results of testing (i.e. actual concentration) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

(3) Duration Of testing: Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

(4) Testing stratified atmospheres When monitoring for entries involving a descent into atmospheres which may be stratified, the atmospheric envelope should be tested a distance of approximately four (4) feet (1.22 meters) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

(5) Periodically retest: To verify that the atmosphere remains within acceptable entry conditions.

¹Title 29 *Code of Federal Regulations* 1910.146, Appendix B.
229 CFR 1910.146 (c)(5)(ii)(C) and (d)(5)(iii).
329 CFR 1910.146 (c)(5)(ii)(F) and (d)(5)(ii).

Confined Space Definitions (Appendix 4E)



DEFINITIONS:

Confined space: a space that is large enough and so configured that an employee can bodily enter and perform assigned work; and 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 is not designed for continuous employee occupancy.

Permit-Required Confined Space: A Confined space is considered "Permit required" if it 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 the 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; or 4). Contains any other recognized serious safety or health hazard.

Non-Permit Required Confined 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".

No-Entry Confined Space: A space where our employees are not allowed to enter. These spaces require the posting of do-not-enter signs. Contractors may be called upon to work in these areas. If a Contractor is called upon to work in these areas, a Confined Space Entry Permit is required and special precautions will be made prior to entry.

Hazardous Atmospheres: An atmosphere which poses a danger to persons or property. Hazardous Atmospheres can be defined as Flammable, Toxic, Irritant / corrosive, and Asphyxiating.

Hazardous Atmospheres - Flammable: Generally An atmosphere arises from enriched oxygen atmospheres, vaporization of flammable liquids, byproducts of work, chemical reactions, concentration of combustible dust or absorption of chemicals from inner surfaces of the confined space. For instance, ammonia may result in a flammable atmosphere.

Hazardous Atmospheres - Toxic: The substances to be regarded as toxic in a confined space can cover the entire spectrum of gases, vapors, and air-borne dusts. Examples include: 1.) Manufacturing process (such as charcoal manufacturing), 2.) Product storage (such as Removing decomposed organic material from a tank), 3.) operations performed in the confined space (such as welding or brazing).

Hazardous Atmospheres – Irritant / and or Corrosive: Irritant or corrosive atmospheres can generally be divided into primary and secondary groups. The primary irritants exert no systemic toxic effects because the products formed by them on tissues of the respiratory tract are non-irritant and other irritant effects are so violent as to obscure any systemic toxic action. (Examples are chlorine, ozone, hydrochloric acid, sulfuric acid, ammonia, etc.). A secondary irritant is one that may produce systemic toxic effects in addition to surface irritation. (Examples include benzene, carbon tetrachloride, other chlorinated solvents, etc.). The danger of this atmosphere is that the worker is usually not aware of any increase in his exposure to toxic substances.

Hazardous Atmospheres – Asphyxiating: The normal atmosphere is composed of approximately 21% oxygen and 78% nitrogen and various other gases. An Asphyxiating Atmosphere is deficient of the proper amount of Oxygen. Reduction of oxygen in a confined space may be the result of either consumption or displacement.

Ventilation: Ventilation for confined space purposes should consist of about 20 air charges per hour. This means charging the air in a space once every three minutes.

Permit-Required Confined Space Decision Flow Chart (Appendix 4F)

