

Section 34

CONFINED SPACE ENTRY

34.A CONFINED SPACES – NON-MARINE FACILITIES

34.A.01 General. Confined space work performed in permanent facilities and/or performed on construction sites shall be performed in accordance with this Section, 29 CFR 1910.146 and ANSI Z117.1. This section does not regulate excavations or underground construction work (tunneling) as a confined space. For the requirements for excavations see Section 25 and for the requirements for underground work and tunneling, see Section 26. ~~In addition, employer shall consult the OSHA Regional authority to determine if the requirements of 29 CFR 1910.146 and those provided herein are sufficient to be considered compliant for the specific confined space work tasks to be performed.~~

34.A.02 For USACE-conducted confined space work activities associated with ship and vessel repair and maintenance operations covered by 29 CFR 1915, see Section 34.B. Confined space work covered by OSHA's Shipyard standard (29 CFR 1915) ~~standard~~ or USCG regulations shall be performed in accordance with those regulations.

34.A.03 The following definitions apply to all confined spaces except those in ships or and vessels:

- a. 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 and, is not designed for continuous employee occupancy;
- b. Non-Permit Required Confined Space (NPRCS) – a confined space that does not contain or have the potential to contain an atmospheric hazard capable of causing death or physical harm. The atmosphere shall ~~should~~ be proven by air monitoring to be

free of hazard. During construction activities, non-permit confined space can also be identified and defined as:

(1) Controlled Atmosphere Confined Space (CACCS) is a confined space where ventilation will control any hazardous atmosphere and any physical hazards have been isolated. This would include sewer pipes or tunnels in which the sewage has been removed, adjacent sewer lines have been isolated from entering the space and where there is a ventilation system in place to remove any methane or other gas that may accumulate.

(2) Isolated-Hazard Confined Space (IHCS) is a confined space in which all physical and atmospheric hazards have been isolated to ensure that the hazards remain isolated. Methods of isolation include such techniques as blanking and blinding pipe lines or water tunnels, removing sections of lines or pipes, or tagging out energy sources.

c. Permit Required Confined Space (PRCS) – Is a confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere that is not controlled by ventilation;

(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; AND

(4) Contains any other recognized serious safety or health hazard (physical, chemical, biological, electrical, radiological, etc.).

d. Confined Space Competent Person (CSCP) – A person with thorough knowledge of OSHA's Confined Space Standard, 29

CFR 1910.146, documented previous experience with PRCS space entry procedures and, the authority to supervise and influence how work is performed on job sites and in facilities.

34.A.04 Confined Space Identification. Facilities and job sites shall assign a Confined Space Competent Person (CSCP) to identify all confined spaces and determine entry rules and requirements(See Figure 34-1). All confined spaces shall be labeled as either a permit required confined space or a non-permit required confined space. All confined spaces shall be identified in writing to any contract personnel who are required to enter such confined space. If it is known that work will be conducted inside a confined space with a possible hazardous atmosphere that could become a PRCS, the contractor shall be notified prior to beginning work and shall be required to follow the requirements for PRCS. A PRCS Permit Required Confined Space (PRCSs) may be entered under PRCS procedures only. Non-Permit Required Confined Spaces (NPRCSs) may be entered under NPRCS entry procedures.

a. PRCS Entry Procedures. Entry into PRCSs shall comply with the requirements of 29 CFR 1910.146.

b. ~~NPRCS Entry Procedures. Entry into NPRCS shall comply with paragraph (c) (5) of 29 CFR 1910.146.~~ Entry into a CACS will require monitoring and the use of audible/visual alarms in the event the ventilation system or the isolation system for physical hazards fail, as well as training for the workers in the area and those working in the CACS on the proper rescue procedures to be used.

c. Entry into a IHCS will require training on the potential hazards to which entrants may be exposed, the required methods of isolation of those hazards, and emergency procedures in the event the isolation fails to protect against the hazard.

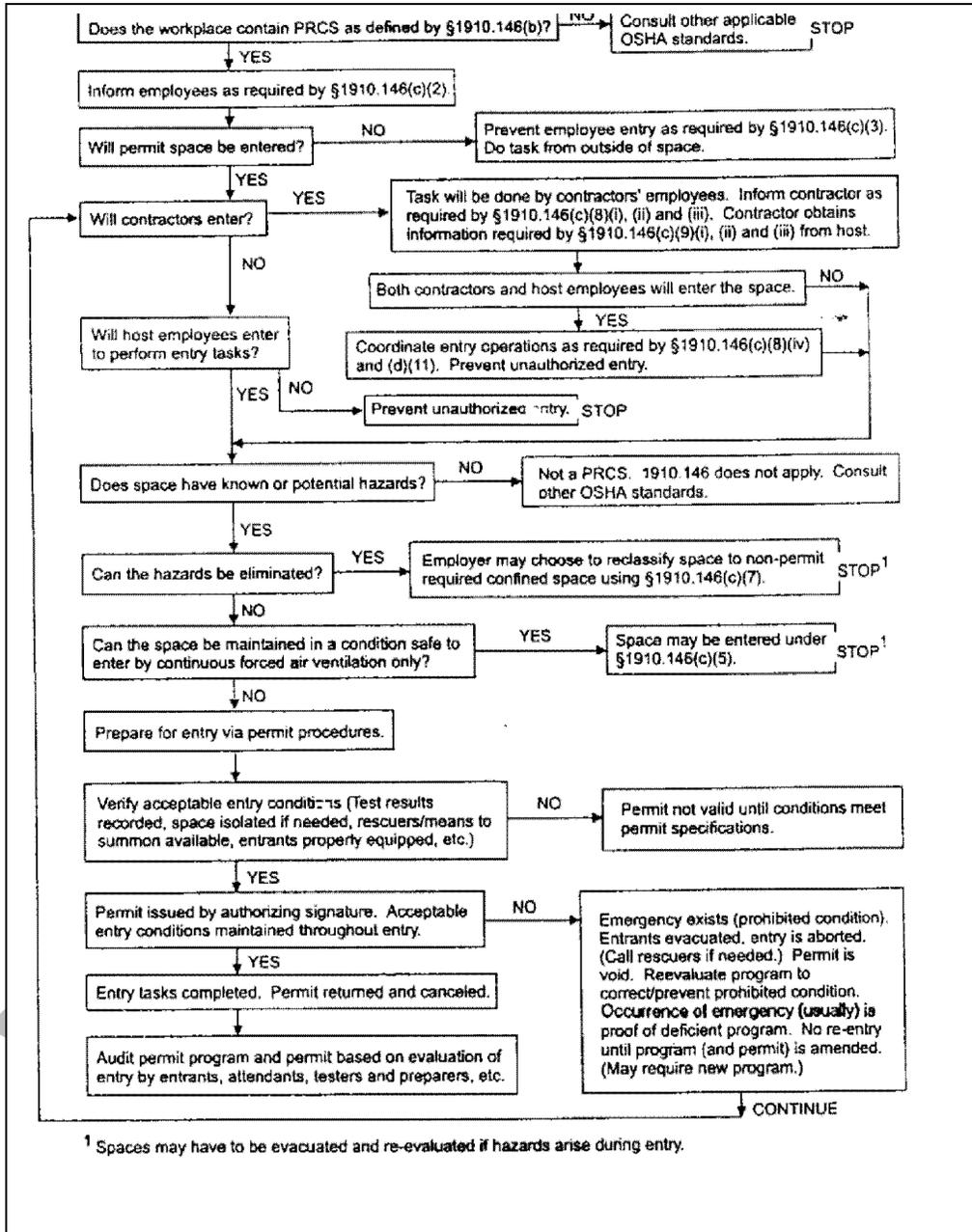


Figure 34-1, Confined Space Identification Flow Chart

34.A.05 CSCP Responsibilities:

- a. Identification and Labeling. The CSCP shall identify and label all confined spaces at the facility/site. The label shall identify the space as a NPRCS (CACS, IHCS), or a PRCS, and provide a warning ~~on~~ with regards to the appropriate ~~warning on~~ entry requirements. If a contract will require contract employees to enter an identified confined space, the contractor shall be notified in the contracting documents that confined space entry and a confined space program will be required for the completion of the contract;
- b. Program Development. The CSCP shall develop and implement an activity/site-specific confined space program. The program shall contain and adequately address the confined space program elements of 29 CFR 1910.146 and those defined in this section;
- c. PRCS Permit Development. The CSCP shall develop complete or review the completed confined space permit (example provided in Figure 34-2) and shall be responsible for enforcing the use of confined space permits for entry into all PRCSs at the facility/site;
- d. Coordination with local emergency responders. The CSCP shall coordinate with local emergency responders to determine if they are capable of a timely (30 minutes) rescue from the specific confined space. If the local emergency responders do not have the appropriate rescue capability, the rescue capability should be developed on-site.

34.A.06 Confined Space Program Elements. The confined space program shall address each of the following elements with facility/site- specific detail:

- a. Identification and Labeling. Describe the process for ~~regularly inspecting facilities/sites and the work tasks performed at them to identify~~ identifying a work area as a confined space and rationale used for classifying the type of confined spaces.

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Describe labeling and enforcement procedures that will assure personnel do not enter confined spaces in an unauthorized fashion;

b. Confined space hazard identification. Describe the air monitoring, physical isolation identification, or ventilation monitoring conducted to identify the space as a PRCS or a CACS NPRCS;

c. Safe confined space entry conditions. Describe the practices and procedures that will be followed to assure that confined spaces will be entered safely. Procedures and practices shall include but are not limited to the following:

(1) ~~NPRCSs – Describe any monitoring and employee training that will assure non-permit conditions are maintained and that employees entering the NPRCS understand how to maintain a safe working environment while working in the NPRCS;~~ CACS and IHCS - Describe the potential atmospheric and/or physical hazards that are present in the confined space and the necessary controls for these hazards; necessary training requirements of entrants and workers in the vicinity of the CACS and IHCS with regards to emergency procedures; and specific emergency procedures to be implemented in the event the controls fail. For CACS also include monitoring being conducted to confirm the controls are appropriately protective of the entrant. In a CACS where there is an atmospheric hazard, such as carbon monoxide or oxygen deficiency, the air shall be monitored continually during entry.

(2) PRCSs – At a minimum, describe how each of the elements below will be enforced at each PRCS:

(a) PRCS entry permit completion, review, processes, signature authority, and maintenance procedures for all PRCS. The entry supervisor or manager shall be required to sign all permits daily before entry;

(b) Acceptable entry conditions;

(c) Observation by the authorized entrant of monitoring or testing in PRCs;

(d) Isolation and/or any alarms for physical hazards or atmospheric hazards of the PRCs;

(e) Purging, inerting, flushing or ventilating the PRCs as necessary to eliminate or control atmospheric hazards;

(f) Installation of barriers to protect entrants from external hazards;

(g) Monitoring requirements and procedures used to verify that acceptable entry conditions are maintained for the duration of the authorized entry;

d. Equipment (and equipment maintenance procedures) to be used for confined space entry at the facility/site. All equipment shall be calibrated and functionally tested before each entry. Equipment shall include the following at a minimum:

(1) Appropriate atmospheric testing and monitoring equipment necessary to assure safe entry and that safe entry conditions are maintained;

(2) Ventilation equipment to assure maintenance of safe entry conditions;

(3) Communication equipment for entry;

(4) Personal Protective Equipment (PPE) necessary in the event that engineering controls and work practices do not adequately protect entrants (~~does not apply to NPRCS~~);

(5) Lighting equipment for entry;

(6) Barriers and shields to keep unauthorized entrants out of the confined spaces during entry;

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(7) Ladders or other equipment necessary for entrant access and egress;

(8) Rescue and emergency equipment needed to remove entrants in the event of an emergency. Particular emphasis shall be placed on the use and implementation of appropriate self-rescue procedures and equipment;

(9) Any other equipment necessary for safe entry into or rescue from confined spaces;

e. Procedures for evaluating PRCS conditions when entry is conducted. Address each of the following in facility/site-specific detail;

(1) Atmosphere conditions required to be maintained during entry to ensure safe entry;

(2) At a minimum, test the PRCS atmosphere for the following in the order specified:

(a) Oxygen;

(b) Combustible gases and vapors; and

(c) Toxic gases and vapors.

f. Policies and procedures to assure that at least one attendant is immediately available outside the PRCS during entry operations to monitor the conditions of the space, to communicate with entrants, and to respond to emergencies;

g. Designate by name, personnel at the facility/site with active roles in confined space entry. Specify their responsibilities for PRCS entry. All permits shall be signed by each employee entering the confined space, the CSCP, attendant and a responsible entry supervisor;

- h. Document procedures and agreements with local emergency responders for notifying emergency services of a pending entry and summoning rescue and emergency services for rescuing PRCS entrants;
- i. Document a facility/site procedure for preparing, issuing, using and canceling PRCS entry permits;
- j. Document procedures for coordinating with employees from outside organizations who will be participating in PRCS entry;
- k. Document procedures for concluding an entry after entry operations have been completed;
- l. Develop procedures for reviewing PRCS entries and documenting lessons learned from them; and
- m. Establish a policy to review cancelled permits to modify the PRCS entry procedures.

34.A.07 Employee Training – All employees entering permit required or non-permit confined spaces, authorized attendants, supervisors and managers, and workers in close proximity of the confined space shall be trained to understand the requirements of the facility/site-specific confined space program and confined space entry procedures.

- a. This training shall be conducted before the beginning of each activity requiring entry into a confined space.
- b. Training shall be documented with a roster of those attending and topics discussed.
- c. Training shall include a minimum of the following: the roles and responsibilities in conducting an entry; specialized training on the use, calibration, and maintenance of monitoring, communications, and retrieval equipment; the hazards of the entry and the control of the hazards of the entry.

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34.A.08 Rescue and Emergency Services – The CSCP shall develop or establish rescue and emergency services for PRCS entry. Emergency responders shall be notified of the training and at least annually, or immediately prior to each entry, shall have participated in an emergency response drill for retrieval of an entrée from the confined space.

34.B WORK PERFORMED IN CONFINED AND ENCLOSED SPACES ON SHIPS AND VESSELS. The following applies only to ship and vessel repair and maintenance, not regular ship and vessel activities. > See Section 19.

34.B.01 Definitions

a. Adjacent spaces are spaces which border an area on a vessel or vessel section such as, cargo tanks or holds, pump or engine rooms, storage lockers, tanks containing flammable or combustible liquids, gases, or solids, and crawl spaces, in all directions, including all points of contact, corners, diagonals, decks, tank tops, and bulkheads.

b. A Competent Person for confined spaces in ships and vessels (CPCSSV) is a person who has knowledge of the designation of spaces where the work is done; ability to understand and follow through on the air sampling, PPE and instructions of a Marine Chemist, Coast Guard authorized persons, or Certified Industrial Hygienist.

c. A confined space on a ship or vessel is a compartment of small size and limited access such as a double bottom tank, cofferdam, or other space which by its small size and confined nature can readily create or aggravate a hazardous exposure.

d. An enclosed space means any space, other than a confined space, which is enclosed by bulkheads and overhead. It includes cargo holds, tanks, quarters, and machinery and boiler spaces.

e. "Enter with restrictions" refers to entry into a confined space when engineering controls, PPE and time limitations are imposed by the competent person.

f. "Safe for Workers" denotes a space that meets the following criteria:

- (1) The oxygen content of the atmosphere is at least 19.5 percent and below 22 percent by volume;
- (2) The concentration of flammable vapors is below 10 percent of the lower explosive limit (LEL);
- (3) Any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, or inerting media are within permissible concentrations at the time of the inspection.

34.B.02 All spaces on a vessel or ship or floating plant that could be considered a "potential confined space", shall be posted as a "Potential Confined Space". An inventory of these spaces shall be maintained in the pilot house and the land based office.

34.B.03 Before and during entry into the types of spaces listed below, the CPCSSV shall test for oxygen content, flammability, and toxicity. These tests and all entries shall be recorded on a entry form or in an entry log and reviewed by the GDA:

- a. Unventilated confined spaces that have been closed up or freshly painted;
- b. Confined spaces that have contained or do contain combustible or flammable liquids or gases;
- c. Confined spaces that have contained or do contain toxic, corrosive, or irritant liquid, gases, or solids.

34.B.04 If the testing determines the oxygen is below 19.5% or above ~~22~~ 23.5%, or the lower explosive limit (LEL) of 10% is

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exceeded, or other toxic substances are measured, then entry shall proceed under the direction of a CPCSSV.

CONFINED SPACE ENTRY PERMIT

Location of Work: _____

Description of Work (Purpose): _____

Authorized Attendants: _____

Authorized Entrants: _____

Entry Date: _____ Entry Time: _____

Outside Contractors: _____

Isolation Checklist (Safe Clearance):

Blanking and/or Disconnecting _____

Electrical _____

Mechanical _____

Other _____

Hazardous Work:

Burning _____

Welding _____

Brazing _____

Open Flame _____

Other _____

Hazards Expected:

Corrosive Materials _____

Hot Equipment _____

Flammable Materials _____

Toxic Materials _____

Drains Open _____

Cleaning (Ex: chemical or water lance)
Spark Producing Operations
Spilled Liquids
Pressure Systems
Other

Vessel Cleaned:
Deposits
Method
Inspection
Neutralized with

Fire Safety Precautions:

Personal Safety:
Ventilation Requirements
Respirators
Life Lines and Harness
Lighting
Communications
Buddy System
Name of Attendant

Atmospheric Gas Tests:

Tests Performed	Location	Reading
Example: (Oxygen)		(19.5%)
Example: (Flammability)		(< 10% LFL)

Remarks:

Test Performed By:

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Signature

Time: _____

Authorizations:

Entry Supervisor: _____

Safety Supervisor/Qualified Person: _____

Emergency Phone Numbers:

Fire Department _____

Ambulance _____

Hospital _____

Doctor _____

Permit Expires: _____

CONFINED-SPACE ENTRY PERMIT	
<u>GENERAL INFORMATION</u>	
<u>Space to be Entered:</u>	<u>Purpose of Entry:</u>
<u>Location:</u>	<u>Duration of Permit: Date:</u>

Figure 34-2. Confined Space Permit

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