

**FISH AND WILDLIFE SERVICE  
OCCUPATIONAL SAFETY AND HEALTH**

**Occupational Safety and Health**

**Part 242 Industrial Hygiene**

**Chapter 11 Confined Spaces**

**242 FW 11**

**11.1 What is the purpose of this chapter?** This chapter describes the U.S. Fish and Wildlife Service (Service) requirements and responsibilities for protecting you from the following when you enter confined spaces while doing your job tasks:

- A. Exposure to hazardous atmospheres,
- B. Engulfment in materials that may trap or suffocate you, or
- C. Other conditions that may be hazardous (e.g., electricity, pressurized systems, etc.).

**11.2 What is the Service policy for entry into confined spaces?** We must take actions that protect you from the hazards associated with entry into confined spaces. At a minimum, we must fully comply with the Occupational Safety and Health Administration's (OSHA) Confined Spaces regulation (29 CFR 1910.146) and describe our policy in writing.

**11.3 What is a confined space, and which confined spaces require permits?**

- A. A confined space is (see Exhibit 1 for determination guidelines):
  - (1) An enclosed space that is large enough and shaped so that you can enter and perform your job tasks,
  - (2) A space with limited or restricted ways to enter or exit (e.g., manholes, tanks, vessels, silos, storage bins, hoppers, vaults, pits, and sewage lift stations), and
  - (3) Not designed for continuous occupancy.
- B. A permit-required confined space is a confined space that poses health or safety hazards and also has one or more of the following characteristics (see Exhibit 1 for determination guidelines):
  - (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 that slopes downward and tapers to a smaller cross-section, or
  - (4) Contains any other recognized serious safety or health hazard.

**11.4 What is the scope of this chapter?** This chapter applies to the following people while performing their job tasks in confined spaces on Service-owned or leased property:

- A. Service employees (including seasonal employees),
- B. Volunteers,
- C. Job Corps and Youth Conservation Corps members,
- D. Student interns, and
- E. Contractors.

**11.5 What are the authorities for this chapter?**

- A. Federal Agency Safety Programs and Responsibilities (Public Law 91-596, Sec 19).
- B. Permit Required Confined Spaces (29 CFR 1910.146).
- C. Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters (29 CFR 1960).
- D. Executive Order 12196, Occupational Safety and Health Programs for Federal Employees.

**11.6 Who is responsible for the confined spaces program?**

**A. The Chief, Division of Safety and Health:**

- (1) Revises and updates this chapter, as necessary.
- (2) Interprets the confined spaces program requirements and serves as a consultant to resolve Servicewide questions or issues.

**B. Regional Directors and the California/Nevada Operations Office (CNO) Manager** must provide sufficient support and resources to effectively implement the confined spaces program in their Region/CNO.

**C. The Regional and CNO Safety Managers:**

- (1) Interpret the confined spaces program requirements and serve as advisors to resolve Regional/CNO questions and issues.
- (2) When requested, assist Project Leaders and supervisors to develop their confined spaces programs.
- (3) Evaluate implementation of the confined spaces program during Regional/CNO field station safety program evaluations.

**D. Project Leaders/Supervisors** are responsible for:

- (1) Evaluating work areas at their field stations to determine if there are any confined spaces that require permits (see section 11.10 for more information about permits).
- (2) Ensuring that signs are posted at permit-required confined spaces indicating that to enter the space, you must have a permit and be authorized.
- (3) Making sure employees and rescue teams have certified training and equipment before entering confined spaces.
- (4) Performing or obtaining atmospheric monitoring at permit-required confined space work areas before anyone may enter them.
- (5) Annually reviewing this program and all entry permits.
- (6) Ensuring that staff properly maintain all required equipment.
- (7) Conducting annual drills with local rescue squads (see OSHA 29 CFR 1910.146, Appendix F).

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**(8)** Ensuring all permit required confined spaces are secure from unauthorized entry, tampering, curious visitors, and children.

**E. Entry Supervisors** are responsible for permit-required confined space entry, and they must coordinate all entry procedures, tests, permits, equipment, and other requirements with everyone involved. The entry supervisor:

**(1)** Knows the hazards that people may encounter during entry, including information on the mode, signs or symptoms, and consequences of exposure to the potential hazards in the particular confined space.

**(2)** Decides if acceptable entry conditions exist.

**(3)** Before signing a permit and allowing people to enter, reads each permit to make sure that all:

**(a)** Information on the permit is complete,

**(b)** Tests listed on the permit have been conducted, and

**(c)** Required procedures and equipment are in place.

**(4)** Authorizes entry.

**(5)** Oversees entry operations.

**(6)** Makes sure that rescue services are available and that the means for calling them is operable.

**(7)** Makes sure that unauthorized people who enter or attempt to enter the confined space are removed.

**(8)** Terminates entry when conditions under an existing permit change or risks to entrants increase.

**(9)** Cancels the permit when the work requiring the entry is complete and everyone has left the confined space.

**(10)** May also serve as an entry attendant or as an authorized entrant as long as he/she is trained and equipped as we require in this chapter. The duties of the entry supervisor may be passed from one qualified person to another during an entry operation.

**F. An Entry Attendant** is a person outside a permit-required confined space who is trained in the procedures for entry and emergency rescue, and monitors the authorized entrants. At least one attendant must be immediately outside a permit-required confined space at all times during an authorized entry operation. The entry attendant must:

**(1)** Know the hazards that people may encounter during entry, including information on the mode, signs or symptoms, and consequences of exposure to the potential hazards in the particular confined space.

**(2)** Be aware of possible behavioral effects/symptoms of hazard exposure on people working in the confined space.

**(3)** Always know how many people are in the confined space and have a way of identifying people before they enter.

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(4) Communicate with the people inside the confined space to monitor their status and alert them if there is a need to evacuate the space.

(5) Call for rescue and other emergency services as soon as necessary. The entry attendant does not enter the confined space to attempt rescue. He/she uses the provided rescue equipment (without entry) and performs any other duties assigned during the emergency or rescue (also see section 11.13).

(6) Never do anything that might distract or interfere with monitoring and protecting the entrants.

(7) Take training in First Aid and cardiopulmonary resuscitation (CPR).

**G. Entrants** are people the entry supervisor authorizes to go inside permit-required confined spaces to perform job tasks. They must have completed the required training (section 11.17), use proper equipment, and observe the entry procedures and permit requirements. They must also:

(1) Know the hazards they may encounter during entry, including information on the mode, signs or symptoms, and consequences of exposure to the potential hazards in the particular confined space.

(2) Communicate with the entry attendant so that he/she can monitor their condition and warn them if they need to evacuate the confined space.

(3) Alert the entry attendant whenever there are warning signs or symptoms of exposure to a dangerous situation, or they detect any prohibited condition.

(4) Exit the confined space as quickly as possible whenever:

(a) The attendant or entry supervisor orders them to evacuate the space,

(b) They recognize any warning signs or symptoms of exposure to a dangerous situation, or

(c) They detect a prohibited condition or an evacuation alarm is activated.

(5) Report any previously unidentified hazards associated with confined spaces in their work areas to their Project Leader, supervisor, or entry supervisor. If new hazards are identified or conditions change, the area must be closed to entry until it is reevaluated (see section 11.9).

**11.7 What terms do you need to know to understand this chapter?**

**A. Acceptable Entry Conditions** are those conditions that must exist in a permit-required confined space before you may enter. The conditions must allow you to enter and work safely within the confined space.

**B. Emergency.** An emergency is:

(1) Failure of hazard control or monitoring equipment, or

(2) An event inside or outside of a confined space that could be hazardous to you.

**C. Engulfment** means being surrounded by a liquid or finely divided (flowing) solid substance that:

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(1) You can inhale and die because it fills or plugs your respiratory system, or

(2) Can exert enough force on your body to cause death by strangulation, constriction, or crushing.

**D. Entry** means passing through an opening into a confined space. Entry occurs as soon as **any part** of your face or body enters **any part** of the opening into the confined space. Entry includes work activities in that space.

**E. Entry Permit.** A written or printed Service document that:

(1) Authorizes you to enter a permit-required confined space to perform job tasks,

(2) Lists the hazards of working in the confined space, and

(3) Describes what initial testing, continuous monitoring, equipment, personal protective equipment, and precautions and procedures you must use before and during entry.

**F. Hazardous Atmosphere** is an atmosphere that may expose you to the risk of death, incapacitation, injury, acute illness, **or** prevent you from escaping from a confined space without someone's help. Following are examples of hazardous atmospheres:

(1) Flammable gas, vapor, or mist in excess of 10% of its lower explosive limit (LEL).

(2) Airborne combustible dust at a concentration that meets or exceeds its LEL. If dust is so thick that you can only see 5 feet or less, you should consider it a hazardous atmosphere.

(3) Atmospheric oxygen concentration below 19.5% or above 23.5%.

(4) Atmospheric concentration of any substance which could exceed the published dose, Permissible Exposure Limit (PEL), or Threshold Limit Values (TLV).

(a) PELs are published in 29 CFR 1910, Subpart G or Subpart Z.

(b) The American Conference of Governmental Industrial Hygienists publishes TLVs for chemical substances and physical agents.

(c) You may contact your Regional/CNO Safety Manager for assistance with these limits.

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

**G. Immediately Dangerous to Life or Health (IDLH) Condition** is any condition that:

(1) Poses an immediate or delayed threat to your life,

(2) Could cause irreversible adverse health effects, or

(3) Could interfere with your ability to escape unaided from a confined space.

**H. Testing** is the identification and evaluation of hazards in a permit-required confined space. Part of testing is to determine what tests we need to perform. Testing helps us to identify and to implement

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adequate control measures for your protection, and to decide if entry conditions are acceptable prior to and during your entry.

**11.8 What are the major elements that OSHA requires for a confined space program?** OSHA requires that confined space programs contain, but are not limited to, the following elements. We describe how we implement each of these elements in sections 11.9 through 11.18:

- A. Workplace Evaluation.**
- B. Permit-Required Confined Space Entry Program.**
- C. Rescue Procedures and Drills.**
- D. Underground Work Requirements.**
- E. Contractor Operations Requirements.**
- F. Training Requirements.**
- G. Recordkeeping Requirements.**

**11.9 What is a workplace evaluation?** A workplace evaluation is when a Project Leader/supervisor determines, under the guidance of a safety professional, if a workplace meets the definition of a confined space, and if the hazards in the workspace require a permit for entry (see Exhibit 1 for guidelines). If your Project Leader/supervisor and safety professional decide a workplace contains permit-required confined spaces, the Project Leader/supervisor must:

- A.** Tell everyone who will work in or around the confined space that it requires a permit for entry,
- B.** Post danger signs outside the workplace (see section 11.10C below), and
- C.** Maintain a written inventory of the confined spaces on the premises, their locations, and evaluations. This inventory must be used to train employees about hazards at their location and be given to contractors who work in or near confined spaces.

**11.10 What are the procedures for the Service's permit-required confined spaces entry program?** If we require you to enter permit-required confined spaces, the entry supervisor must:

**A. Require an entry permit.** The entry supervisor must complete an entry permit before anyone enters a permit-required confined space.

**(1)** Following are the elements that must be on an entry permit:

- (a)** The name (or description) and location of the permit-required confined space,
- (b)** The purpose of the entry,
- (c)** The date of the entry and the authorized duration. Since the entry supervisor must evaluate each confined space before the first entry of every shift, the permit duration may not be longer than one shift. The entry supervisor authorizing the entry must issue a new permit at the beginning of each shift,

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- (d) A list of employees who are eligible to be entry supervisors,
  - (e) A list of employees who are eligible to be entry attendants,
  - (f) A list of people who the entry supervisor authorizes to enter the confined space,
  - (g) The printed name and signature of the entry supervisor authorizing the entry,
  - (h) A list of hazards in the space,
  - (i) The measures for isolating the space,
  - (j) Control measures (for example, lockout/tagout, purging, inerting, ventilating, and flushing). Inerting means displacing the atmosphere in a permit-required confined space by a noncombustible gas (such as nitrogen) to a level resulting in a noncombustible atmosphere,
  - (k) Maximum acceptable airborne level of a contaminant(s),
  - (l) Results of initial and periodic tests, time of tests, and names or initials of the testers,
  - (m) Testing and monitoring equipment that will be used before and during entry and a description of the procedures for verifying that environmental conditions are maintained during the entire entry. The permit should include dates for air monitoring and environmental atmospheric testing instrumentation calibration for both onsite calibration to ambient air and annual calibration,
  - (n) Information about the rescue service and any other services that will be used and the means of communicating with them, including their location and telephone numbers,
  - (o) Rescue equipment required at the site and rescue and emergency services that can be summoned and an efficient means for summoning those services,
  - (p) The communication system that the entrants and the entry attendant will use to maintain contact during entry,
  - (q) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment that the entrants and rescuers must use to comply with this policy, and
  - (r) Any other information needed to make the entry safe.
- (2) FWS Form [3-2339](#) is a template entry permit.
- (3) Before approving the permit and allowing entry, the entry supervisor must verify that the requirements on the permit are met, that all required tests are complete, and that all procedures and equipment specified by the permit are in place. Exhibit 2 is a Confined Space Entry Checklist that entry supervisors may use to verify all requirements.
- (4) The entry supervisor must stop the entry and cancel the permit when:
- (a) The entry operations the permit covers are completed, or

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(b) A condition the permit prohibits occurs in or near the permit-required confined space.

**B. Evaluate the hazards and test the atmosphere inside the confined space before allowing you to enter.**

(1) Before you may perform work in the space, we must test for atmospheric hazards:

(a) First for oxygen content,

(b) Then for combustible gases and vapors, and

(c) Then for toxic gases and vapors.

(2) We test the internal atmosphere with a calibrated direct reading instrument. We must ensure testing instrumentation is appropriately calibrated to ambient air immediately before air testing or monitoring potentially hazardous atmospheres. We must ensure the instrumentation is professionally calibrated at least annually.

(3) If we detect unsafe conditions, we must ventilate the work area and make sure it is safe before you enter.

(4) After we ventilate the area and before you may enter, we must test again to make sure that there are acceptable entry conditions.

(5) There are two conditions under which we may use alternate procedures to enter the area:

(a) Where the only hazard posed in the space is from an atmospheric hazard that we can control through ventilation, and

(b) Where the permit space poses no atmospheric hazard and we can eliminate all other hazards prior to entry. (See 29 CFR 1910.146(c)(5)(ii) and 29 CFR 1910.146(c)(7) for details.)

**C. Prevent unauthorized entry into the space.** The Project Leader/supervisor or entry supervisor must:

(1) Mark each permit-required confined space with a sign stating, **“DANGER PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER UNLESS AUTHORIZED.”**

(2) Ensure all unauthorized people leave the area before anyone begins to enter the confined space.

(3) Secure all openings to permit-required confined spaces to prevent the entry of unauthorized people.

**D. Monitor to make sure you have a continuous supply of clean air when:**

(1) We have detected combustible or explosive gas vapors and reduced them to safe levels by ventilation.

(2) You are using organic solvents in your work.

(3) You are using open flame torches in your work. (Also ensure that a “hot work permit” is obtained prior to entry.)

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(4) You are working in a manhole or vault that is located near a main street or traffic area.

(5) The atmosphere inside a manhole or vault is oxygen-deficient or toxic.

**E. During entry operations we must:**

(1) Continuously monitor conditions inside the workspace to make sure that entry operations meet all requirements listed on the entry permit.

(2) Have rescue services available and an efficient means to contact them.

(3) Give entrants required personal protective equipment and safety equipment.

(5) Provide barriers to protect entrants from external hazards such as vehicles and pedestrians.

(6) Provide communication equipment, such as walkie-talkies, hand signals, or other established and functional means of communication between entrants and attendants.

(7) If artificial lighting is required to complete tasks, or for emergency escape, we must provide entrants with equipment rated as intrinsically safe (i.e., safe to use in potentially explosive atmospheres).

(8) Provide ventilating equipment to maintain acceptable entry conditions.

(9) Provide any other equipment necessary for safe entry and exit from the space.

**11.11 What are typical hazards associated with work in permit-required confined spaces?** Exhibit 3 is a list of potential hazards you may encounter while doing work in permit-required confined spaces.

**11.12 What general safety rules must entrants follow when working in or around permit-required confined spaces?** Exhibit 4 is a list of general rules everyone in or around the confined space must follow. The Project Leader/supervisor must ensure drills are conducted for rescue procedures in accordance with OSHA 29 CFR 1910.146, Appendix F.

**11.13 What are the requirements for rescue in a permit-required confined space?** Entry attendants must always be prepared to perform a rescue without entering a permit-required confined space and within a time frame appropriate for the hazards in the space.

**A.** Entrants must wear a body or chest harness with a lifeline attached to a lifting device, outside of the confined space, that has sufficient mechanical advantage for the attendant to remove the entrant in an emergency. If wearing retrieval equipment increases the level of risk or will not work, then a rescue service provider must be onsite.

**B.** We may also use a rescue service during emergency rescues. The name and telephone/contact number of the emergency rescue service must be on each entry permit.

**C.** In an emergency, the entry attendant must inform rescuers of the hazards inside the confined space before they enter.

**11.14 What are the requirements for doing work underground?** We must take the following precautions when you work underground, regardless of whether or not a permit is required for the confined space:

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**A. Guarding.** If you remove manhole or vault covers so that you can enter, we must guard the opening as soon as possible with a railing, temporary cover, or another barrier to prevent:

- (1) An accidental fall through the opening, and
- (2) Anything from being dropped on workers inside the opening.

**B. First Aid.** While you are inside manholes or vaults, a person with basic first aid training must be available for immediate response.

**C. Flames or Flame-producing Equipment.** When you must use open flames inside confined spaces, the entry supervisor must ensure:

- (1) That a "hot work permit" is obtained in accordance with Regional/CNO policy requirements.
- (2) The atmosphere inside the workspace is tested for combustible gas:
  - (a) Immediately before you use the open flame device, and
  - (b) At least once per hour while you are using the device.
- (3) Fuel tanks (such as acetylene) are kept outside of the manhole or vault when they are not being used.

**D. Ladders.** You must use ladders for entry and exit when manholes or vaults are more than 4 feet deep.

**11.15 What actions are required if a contractor needs to work in a permit-required confined space on a Service-owned or leased property?**

**A.** Project Leaders/supervisors must do the following:

- (1) Tell the contractor:
  - (a) That the workplace contains permit-required confined spaces,
  - (b) That he/she must follow all requirements in this chapter and on the entry permit, and
  - (c) About our precautions and procedures to protect our workers while they are in or near the permit-required confined spaces.
- (2) Coordinate entry operations with the contractor's field station project leader if both contractor and Service employees will work in the permit-required confined space.
- (3) When entry operations are completed, ask the contractor what hazards he/she found or created, and
- (4) Request comments about the overall entry program.

**B.** As part of our contracts, we must ensure that contractors:

- (1) Make sure that all of their employees follow the requirements in this chapter and in 29 CFR 1910.146, Permit Required Confined Spaces.

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**(2)** Get all information about the permit-required confined space hazards and entry operations from the contractor's field station project leader.

**(3)** Coordinate entry operations with the Project Leader if both contractor and Service employees will work in the permit-required confined space.

**(4)** Tell the contractor's project leader in writing:

**(a)** What permit-required confined spaces program the contractor's employees will follow, and

**(b)** About any hazards found or created during work in the permit-required confined space.

**11.16 Do entrants need a permit to enter all confined spaces to do work?**

**A.** No. You do not need a permit to work in a confined space if:

**(1)** We determine that it does not contain any hazard capable of causing death or serious physical harm to you, and

**(2)** Its atmosphere does not have the potential of causing death or serious physical harm to you.

**B.** However, your entry supervisor or Project Leader/supervisor must evaluate confined spaces that do not require permits for actual or potential hazards before you enter them to work. This can be accomplished by developing a Job Hazard Analysis (JHA) that lists specific procedures, hazards, personal protective equipment, and precautions to take when working in each non-permit confined space.

**11.17 What are the training requirements for entering permit-required confined spaces?** We must train employees if we require them to enter or monitor permit-required confined space workplaces.

**A.** We must train employees:

**(1)** Before a Project Leader/supervisor assigns you to work in or monitor permit-required confined spaces,

**(2)** Whenever there is a change in permit-required confined space operations that might present a hazard for which you were not already trained,

**(3)** If the entry supervisor thinks you do not fully understand the permit-required confined spaces procedures or if previous training was insufficient, and

**(4)** If we develop new or revised procedures.

**B.** Training must include:

**(1)** Duties of entry supervisor, entry attendant, and entrant,

**(2)** Confined space entry permits,

**(3)** Hazards of confined spaces,

**(4)** Use of air monitoring equipment,

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- (5) First aid and CPR training,
- (6) Emergency action and rescue procedures,
- (7) Confined space entry and rescue equipment,
- (8) Rescue training, including entry and removal from the type of confined spaces you will be working in,
- (9) Required personal protective equipment and use and care of this equipment, and
- (10) Hot work permits if confined space work calls for the use of flame producing equipment.

**11.18 What records does the Service keep for permit-required confined spaces?**

**A.** Your Project Leader or supervisor must keep a record of all permit-required confined spaces training you complete for 5 years after completion.

**B.** The records, which may be certificates of completion, should include:

- (1) Your name,
- (2) Signature of the trainer,
- (3) Description of the training,
- (4) The dates of the training, and
- (5) A written inventory of all confined spaces, their location, and evaluation.

**C.** Project Leaders/supervisors must keep entry permits at the field station for 12 months from the time they expire.

/sgd/ Kenneth Stansell  
ACTING DIRECTOR

Date: November 13, 2007