

**§1915.12 Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres.**

The employer shall ensure that atmospheric testing is performed in the following sequence: oxygen content, flammability, toxicity.

(a) *Oxygen content.* (1) The employer shall ensure that the following spaces are visually inspected and tested by a competent person to determine the atmosphere's oxygen content prior to initial entry into the space by an employee:

- (i) Spaces that have been sealed, such as, but not limited to, spaces that have been coated and closed up, and non-ventilated spaces that have been freshly painted;
- (ii) Spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases;
- (iii) Spaces and adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive, or irritant;
- (iv) Spaces and adjacent spaces that have been fumigated; and
- (v) Spaces containing materials or residues of materials that create an oxygen-deficient atmosphere.

(2) If the space to be entered contains an oxygen deficient atmosphere, the space shall be labeled "Not Safe for Workers" or, if oxygen-enriched, "Not Safe for Workers—Not Safe for Hot Work." If an oxygen-deficient or oxygen-enriched atmosphere is found, ventilation shall be provided at volumes and flow rates sufficient to ensure that the oxygen content is maintained at or above 19.5 percent and below 22.0 percent by volume. The warning label may be removed when the oxygen content is equal to or greater than 19.5 and less than 22.0 percent by volume.

(3) An employee may not enter a space where the oxygen content, by volume, is below 19.5 percent or above 22.0 percent. Exception: An employee may enter for emergency rescue or for a short duration for installation of ventilation equipment necessary to start work in the space provided:

- (i) The atmosphere in the space is monitored for oxygen content, by volume, continuously; and
- (ii) Respiratory protection and other appropriate personal protective equipment and clothing are provided in accordance with subpart I of this part.

NOTE TO PARAGRAPH (a): Other provisions for work in IDLH atmospheres are located in subpart I of this part.

(b) *Flammable atmospheres.* (1) The employer shall ensure that spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases are:

- (i) Inspected visually by the competent person to determine the presence of combustible or flammable liquids; and
- (ii) Tested by a competent person prior to entry by an employee to determine the concentration of flammable vapors and gases within the space.

(2) If the concentration of flammable vapors or gases in the space to be entered is equal to or greater than 10 percent of the lower explosive limit, the space shall be labeled "Not Safe for Workers" and

“Not Safe for Hot Work.” Ventilation shall be provided at volumes and flow rates sufficient to ensure that the concentration of flammable vapors is maintained below 10 percent of the lower explosive limit. The warning labels may be removed when the concentration of flammable vapors is below 10 percent of the lower explosive limit.

(3) An employee may not enter a space where the concentration of flammable vapors or gases is equal to or greater than 10 percent of the lower explosive limit. Exception: An employee may enter for emergency rescue or for a short duration for installation of ventilation equipment necessary to start work in the space, provided:

(i) No ignition sources are present;

(ii) The atmosphere in the space is monitored continuously;

(iii) Atmospheres at or above the upper explosive limit are maintained; and

(iv) Respiratory protection and other appropriate personal protective equipment and clothing are provided in accordance with subpart I of this part.

NOTE 1 TO PARAGRAPH (b): Additional provisions for work in IDLH atmospheres are located in subpart I of this part.

NOTE 2 TO PARAGRAPH (b): Additional provisions for work in spaces containing a flammable substance which also has a permissible exposure limit, are located in subpart Z of 29 CFR part 1915, and §1915.12(c).

(c) *Toxic, corrosive, irritant or fumigated atmospheres and residues.* (1) The employer shall ensure that spaces or adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive or irritant are:

(i) Inspected visually by the competent person to determine the presence of toxic, corrosive, or irritant residue contaminants; and

(ii) Tested by a competent person prior to initial entry by an employee to determine the air concentration of toxics, corrosives, or irritants within the space.

(2) If a space contains an air concentration of a material which exceeds a part 1915 subpart Z permissible exposure limit (PEL) or is IDLH, the space shall be labeled “Not Safe for Workers.” Ventilation shall be provided at volumes and flow rates which will ensure that air concentrations are maintained within the PEL or, in the case of contaminants for which there is no established PEL, below the IDLH. The warning label may be removed when the concentration of contaminants is maintained within the PEL or below IDLH level.

(3) If a space cannot be ventilated to within the PELs or is IDLH, a Marine Chemist or CIH must re-test until the space can be certified “Enter with Restrictions” or “Safe for Workers.”

(4) An employee may not enter a space whose atmosphere exceeds a PEL or is IDLH. Exception: An employee may enter for emergency rescue, or for a short duration for installation of ventilation equipment provided:

(i) The atmosphere in the space is monitored continuously;

(ii) Respiratory protection and other necessary and appropriate personal protective equipment and clothing are provided in accordance with subpart I of this part.

NOTE TO PARAGRAPH (c): Other provisions for work in IDLH atmospheres are located in subpart I of this part.

(d) *Training of employees entering confined and enclosed spaces or other dangerous atmospheres.*

- (1) The employer shall ensure that each employee that enters a confined or enclosed space and other areas with dangerous atmospheres is trained to perform all required duties safely.
  - (2) The employer shall ensure that each employee who enters a confined space, enclosed space, or other areas with dangerous atmospheres is trained to:
    - (i) Recognize the characteristics of the confined space;
    - (ii) Anticipate and be aware of the hazards that may be faced during entry;
    - (iii) Recognize the adverse health effects that may be caused by the exposure to a hazard;
    - (iv) Understand the physical signs and reactions related to exposures to such hazards;
    - (v) Know what personal protective equipment is needed for safe entry into and exit from the space;
    - (vi) Use personal protective equipment; and
    - (vii) Where necessary, be aware of the presence and proper use of barriers that may be needed to protect an entrant from hazards.
  - (3) The employer shall ensure that each entrant into confined or enclosed spaces or other dangerous atmospheres is trained to exit the space or dangerous atmosphere whenever:
    - (i) The employer or his or her representative orders evacuation;
    - (ii) An evacuation signal such as an alarm is activated ; or
    - (iii) The entrant perceives that he or she is in danger.
  - (4) The employer shall provide each employee with training:
    - (i) Before the entrant begins work addressed by this section; and
    - (ii) Whenever there is a change in operations or in an employee's duties that presents a hazard about which the employee has not previously been trained.
  - (5) The employer shall certify that the training required by paragraphs (d)(1) through (d)(4) of this section has been accomplished.
    - (i) The certification shall contain the employee's name, the name of the certifier, and the date(s) of the certification.
    - (ii) The certification shall be available for inspection by the Assistant Secretary, the Director, employees, and their representatives.
- (e) *Rescue teams.* The employer shall either establish a shipyard rescue team or arrange for an outside rescue team which will respond promptly to a request for rescue service.

(1) Shipyard rescue teams shall meet the following criteria:

(i) Each employee assigned to the shipyard team shall be provided with and trained to use the personal protective equipment he or she will need, including respirators and any rescue equipment necessary for making rescues from confined and enclosed spaces and other dangerous atmospheres.

(ii) Each employee assigned to the shipyard rescue team shall be trained to perform his or her rescue functions including confined and enclosed and other dangerous atmosphere entry.

(iii) Shipyard rescue teams shall practice their skills at least once every 12 months. Practice drills shall include the use of mannequins and rescue equipment during simulated rescue operations involving physical facilities that approximate closely those facilities from which rescue may be needed.

NOTE TO PARAGRAPH (e)(1)(iii): If the team performs an actual rescue during the 12 month period, an additional practice drill for that type of rescue is not required.

(iv) At least one person on each rescue team shall maintain current certification in basic first aid which includes maintenance of an airway, control of bleeding, maintenance of circulation and cardiopulmonary resuscitation (CPR) skills.

(2) The employer shall inform outside rescue teams of the hazards that the team may encounter when called to perform confined and enclosed space or other dangerous atmosphere rescue at the employer's facility so that the rescue team can be trained and equipped.

NOTE TO PARAGRAPH (e): The criteria for in-house rescue, listed in paragraph (e)(1) can be used by the employer in evaluating outside rescue services.

(f) *Exchanging hazard information between employers.* Each employer whose employees work in confined and enclosed spaces or other dangerous atmospheres shall ensure that all available information on the hazards, safety rules, and emergency procedures concerning those spaces and atmospheres is exchanged with any other employer whose employees may enter the same spaces.

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