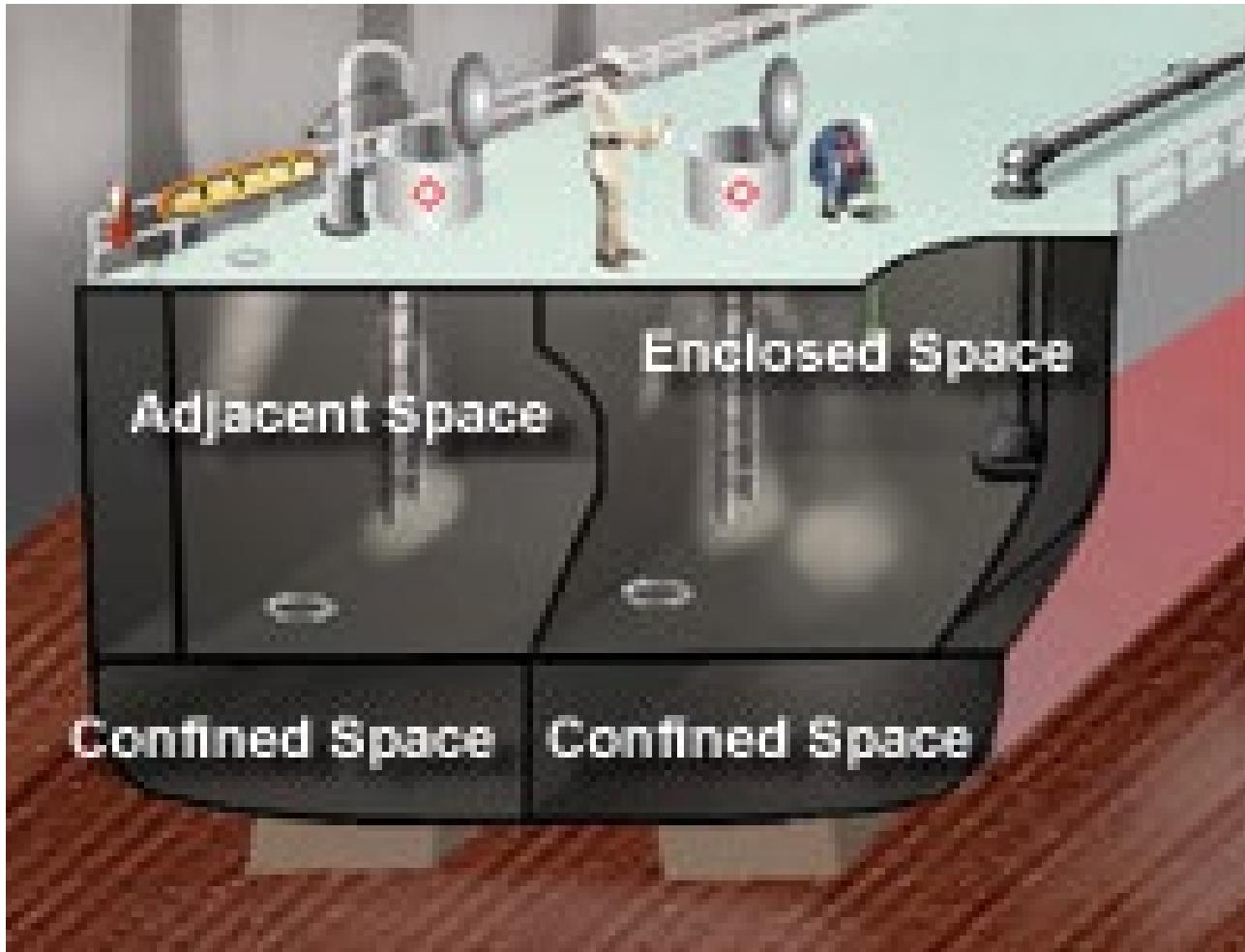


# Shipyard Employment

## Confined and Enclosed Spaces and Other Dangerous Atmospheres - Subpart B

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# Confined and Enclosed Spaces and Other Dangerous Atmospheres - Subpart B

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- 1915.11 – Scope, application, and definitions
- 1915.12 – Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres work
- 1915.13 – Cleaning and other cold work
- 1915.14 – Hot work
- 1915.15 – Maintenance of safe conditions
- 1915.16 – Warning signs and labels

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# Definitions

1915.11

- **“Adjacent spaces”** – spaces bordering a subject space in all directions
  - Including all points of contact, corners, diagonals, decks, tank tops, and bulkheads



# Definitions

1915.11

- **“Dangerous atmosphere”**

- Atmosphere exposing employees to risk of:
    - » Death
    - » Incapacitation
    - » Impairment of ability to self-rescue (i.e., escape unaided from a confined or enclosed space)
    - » Injury
    - » Acute illness



# Definitions

1915.11

- “Enter with restrictions”
  - Space where entry for work is permitted only if:
    - » Engineering controls
    - » Personal protective equipment
    - » Clothing
    - » And time limitations are specified



# Definitions

1915.11

- **“Entry”**

- Action which person passes through opening into a space
- Entry occurs as any part of body breaks plane of opening into the space



# Definitions

1915.11

- “Immediately dangerous to life or health (IDLH)”
  - Atmosphere poses immediate threat to life

*Or*

- Likely to result in acute or immediate severe health effects



# Definitions

1915.11

- “**Inert**” or “**inerted atmosphere**”
  - Oxygen content of atmosphere in space maintained  $\leq 8.0\%$  by volume
    - » Or at a level below 50% of amount require to support combustion

*Or*

- Space is flooded with water and vapor concentration of flammable materials in space above water line is  $< 10\%$  of the LEL



# Definitions

1915.11

- **"Labeled"**

- Identified with a sign, placard, or other form of written communication
- Including pictograms, providing information on status or condition of work space which it is attached



# Definitions

1915.11

- **"Not Safe for Hot Work"**

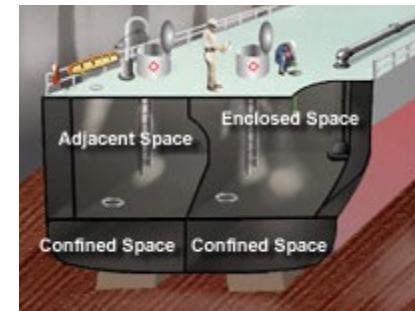
- Space where hot work not performed because conditions do not meet criteria for *Safe for Hot Work*



- **"Not Safe for Workers"**
  - Space where employee not enter because conditions do not meet criteria for *Safe for Workers*



- **"Oxygen-deficient atmosphere"**
  - Atmosphere having an oxygen concentration of less than 19.5% by volume
- **"Oxygen-enriched atmosphere"**
  - Atmosphere containing 22.0% or more oxygen by volume



- **"Safe for Hot Work"**

- A space that meets all of the following criteria:
  - Oxygen content of the atmosphere does not exceed 22.0% by volume;
  - Concentration of flammable vapors in the atmosphere is less than 10% of the LEL;
  - Residues or materials in space are not capable of producing a higher concentration than permitted in paragraph (1) or (2) of the above,
  - Adjacent spaces have been cleaned, or inerted, or treated sufficiently to prevent spread of fire

# Definitions

1915.11

## ● "Safe for Workers"

- A space that meets the following criteria:
  - The oxygen content of the atmosphere is at least 19.5 % and below 22% by volume;
  - Concentration of flammable vapors is below 10% of the LEL;
  - Any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, or inerting media within permissible concentrations at time of inspection;
  - Any residues or materials associated with the work will not produce uncontrolled release of toxic materials under existing atmospheric conditions.

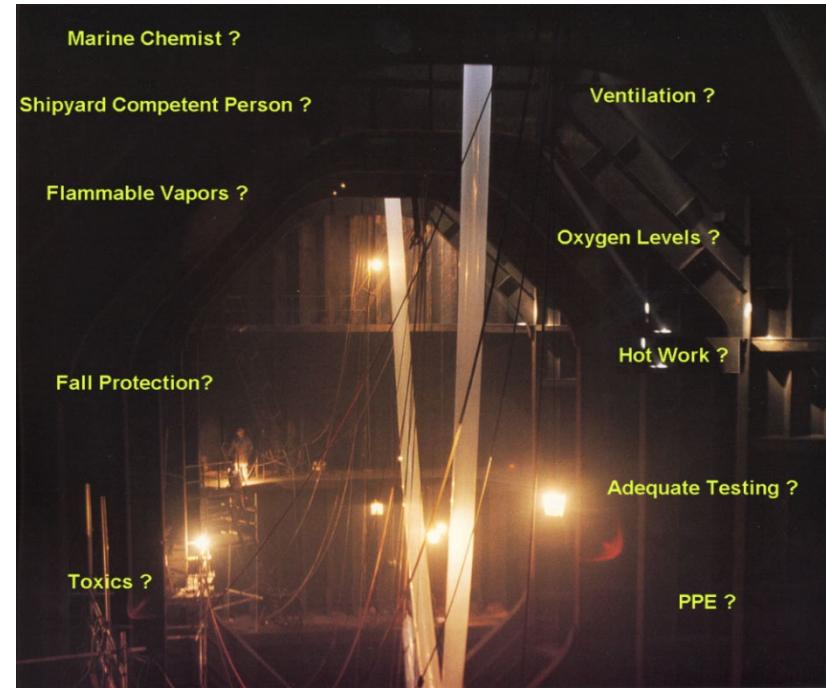
# Definitions

1915.11

- **"Visual inspection"**

- Physical survey of space, its surroundings and contents to identify hazards such as:

- Restricted accessibility
    - Residues
    - Unguarded machinery
    - Piping or electrical systems



# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12

- Atmospheric testing performed in following sequence:
  - Oxygen content
  - Flammability
  - Toxicity



# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(a)

- Spaces visually inspected and tested by competent person to determine atmosphere's oxygen content prior to entry into space:
  - Been sealed, spaces coated and closed up, and non-ventilated spaces freshly painted
  - Contain or have contained combustible or flammable liquids or gases
  - Contain or have contained liquids, gases, or solids that are toxic, corrosive, or irritant
  - Been fumigated
  - Containing materials or residues of materials that create an oxygen-deficient atmosphere

# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(b)

- Spaces and adjacent spaces containing or have contained combustible or flammable liquids or gases are:
  - Inspected visually by competent person
    - » Determine presence of combustible or flammable liquids; and
  - Tested by a competent person prior to entry by an employee
    - » Determine concentration of flammable vapors and gases within space



# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(c)

- Spaces or adjacent spaces containing or have contained liquids, gases, or solids that are toxic, corrosive or irritant are:
  - Inspected visually by competent person
    - » Determine presence of toxic, corrosive, or irritant residue contaminants; and
  - Tested by competent person prior to initial entry by employee
    - » Determine air concentration of toxics, corrosives, or irritants within space



# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(d)

- Employee entering confined or enclosed space and other areas with dangerous atmospheres
  - Trained to perform all required duties safely



# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(e)

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- Establish a shipyard rescue team **or** arrange for outside rescue team
  - Respond promptly to request for rescue service
- Inform outside rescue teams of hazards that team may encounter
  - Called to perform confined and enclosed space or other dangerous atmosphere rescue
  - Rescue team can be trained and equipped

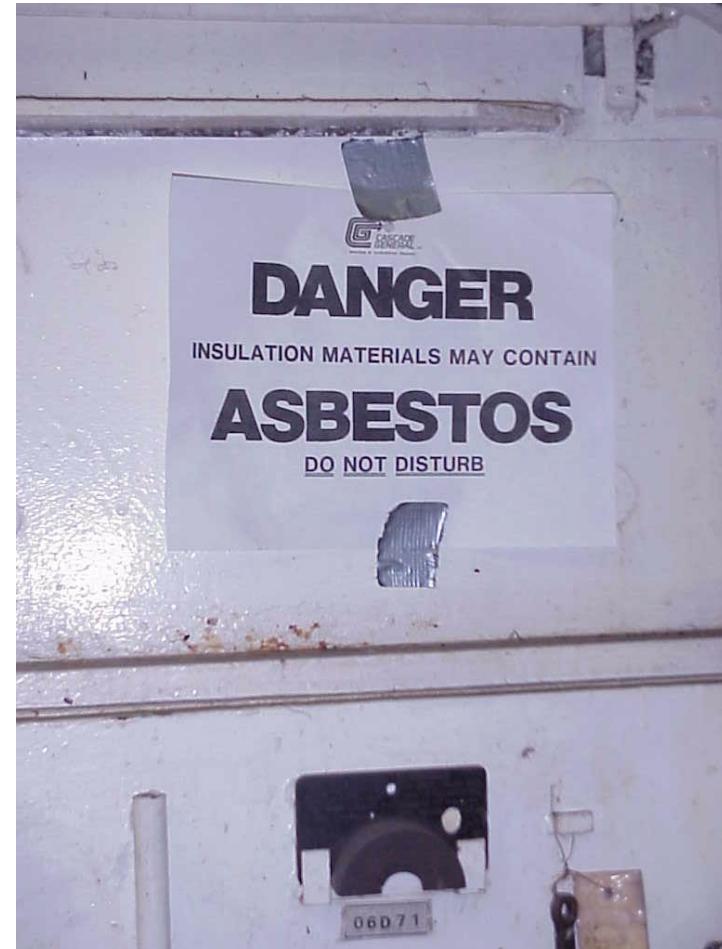


# Precautions & Testing Before Entering Confined and Enclosed Spaces

1915.12(f)

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- Employees working in confined and enclosed spaces or other dangerous atmospheres;
  - Information on hazards, safety rules, and emergency procedures concerning spaces and atmospheres
    - » Exchanged with any other employer whose employees entering same spaces



# Cleaning and Other Cold Work

1915.13(b)

- Liquid residues of hazardous materials removed from work spaces
  - Before start cleaning operations or cold work in space
- Testing conducted by competent person in space prior to beginning of cleaning or cold work
- Continuous ventilation provided



# Hot Work

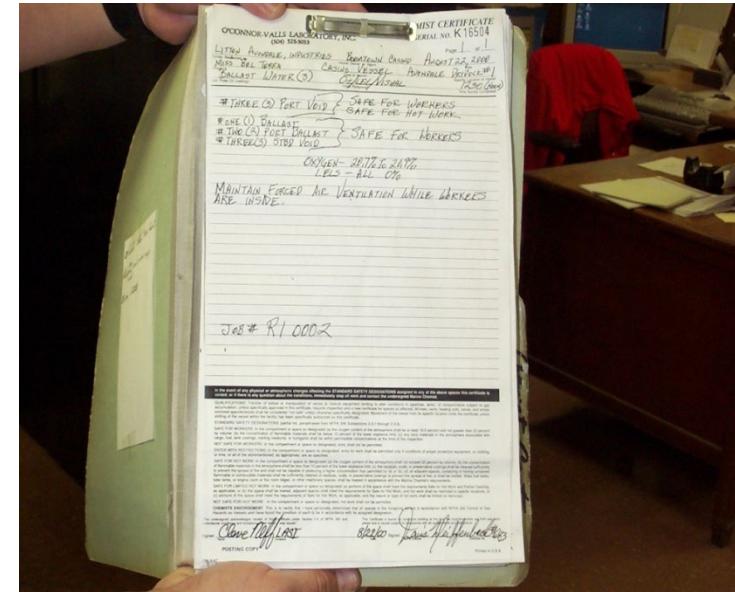
1915.14

- Hot work requiring testing by a Marine Chemist or Coast Guard authorized person
  - Hot work not performed in or on the following confined and enclosed spaces and other dangerous atmospheres, boundaries of spaces or pipelines until work area tested and certified by Marine Chemist or U.S. Coast Guard authorized person as "Safe for Hot Work":
    - » Spaces contain or have contained combustible or flammable liquids or gases
    - » Immediately adjacent to fuel tanks containing or have contained fuel; and
    - » On pipelines, heating coils, pump fittings or other accessories connected to spaces contain or have contained fuel
    - » Exception: Within spaces adjacent to spaces in which flammable gases or liquids have a flash point below 150° F and distance between such spaces and work is 25 feet or greater

# Hot Work

1915.14(a)

- Certificate issued by Marine Chemist
  - Posted in vicinity of affected operations
  - While they are in progress
  - Kept on file at least 3 months after completion of operation



# Hot Work

1915.14(b)

- Hot work requiring testing by a competent person
  - Hot work not permitted in/on spaces or adjacent spaces or other dangerous atmospheres until tested by competent person
  - Determined to contain no concentrations of flammable vapors equal to or greater than 10% of the lower explosive limit:
    - » Dry cargo holds
    - » Bilges
    - » Engine room and boiler spaces for which a Marine Chemist or a Coast Guard authorized person certificate is not required of this section
    - » Vessels and vessel sections for which a Marine Chemist or Coast Guard authorized person certificate is not required
    - » Land-side confined and enclosed spaces or other dangerous atmospheres not covered of this section

# Maintenance of Safe Conditions

1915.15(a)

- Pipelines carrying hazardous materials into spaces certified "Safe for Workers" or "Safe for Hot Work"
  - Disconnected
  - Blanked off
  - Blocked by positive method to prevent hazardous materials discharged into space



# Maintenance of Safe Conditions

1915.15(c)

- Tests to maintain conditions of a Marine Chemist's certificates
  - Competent person visually inspect and test each space certified as "Safe for Workers" or "Safe for Hot Work"
    - » Ensure atmospheric conditions within space maintained in conditions established by certificate



# Maintenance of Safe Conditions

1915.15(d)

- Change in conditions of Marine Chemist's certificate
  - Competent person finds atmospheric conditions within certified space fails to meet applicable requirements of 1915.12, 1915.13, and 1915.14 of this part
    - » Work in certified space stopped and not resumed until space retested by Marine Chemist and new certificate issued in accordance with 1915.14(a)



# Warning Signs and Labels

1915.16(a) - (b)

- Employee comprehension of signs and labels
  - Sign or label posted to comply with requirements
    - » Presented in manner perceived and understood
- Posting of large work areas
  - Entire work area tested and certified: not safe for workers, not safe for hot work
    - » Sign or label posted conspicuously at access to work area



# Thank You For Attending!

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## Final Questions?

**1-800-NC-LABOR**  
(1-800-625-2267)  
**[www.nclabor.com](http://www.nclabor.com)**



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