

ATLB-1380: LABORERS: CONFINED SPACE

Cuyahoga Community College

Viewing: ATLB-1380 : Laborers: Confined Space

Board of Trustees:

2017-06-29

Academic Term:

Spring 2019

Subject Code

ATLB - AIT-Construct/Hazard Material

Course Number:

1380

Title:

Laborers: Confined Space

Catalog Description:

Certificate course covering the Occupational Safety and Health Administration (OSHA) standards with respect to working in confined spaces. Included are workplace hazards and health concerns and respiratory protection. In addition, working procedures and permit writing requirements will be addressed.

Credit Hour(s):

1

Lecture Hour(s):

1

Requisites

Prerequisite and Corequisite

Departmental approval: admission to the Laborer' apprenticeship program.

Outcomes

Course Outcome(s):

Explain the OSHA regulations relating to working in confined spaces including hazards, health effects and the required personal protective equipment (PPE).

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Discuss the OSHA standards regarding work performed in confined space.
2. Define terms related to confined space.
3. Identify various confined spaces in the workplace.
4. Discuss the hazards including atmospheric, engulfment and entrapment on jobsites.
5. Describe the different health effects on workers in confined space including atmospheric and acute and chronic.
6. Explain the dangers of working in temperature extremes.
7. Describe and define the PPE required for worker protection while performing tasks in confined space environments.

Course Outcome(s):

Discuss protection procedures from inhalation hazards including various respirators, supplied air monitoring and energy isolation while working in confined space.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Describe the self-contained breathing apparatus (SCBA) and discuss the situations requiring its use.
 2. Identify the protection factors for each respirator.
 3. Discuss the permissible exposure a limit (PEL) of toxic contaminates.
 4. Discuss the importance of isolation in confined space and identify the types of energy that require lockout/tag out and air purging.
 5. Discuss the purpose of air monitoring and list the devices available and the testing procedures for each.
 6. Discuss the need for respiratory protection on jobsites in confined space.
 7. List the different types of respirators and discuss the relative function of each.
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Course Outcome(s):

Demonstrate the ability to work safely in confined spaces and employ the various procedures as prescribed in the OSHA regulations.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Identify the confined space team and describe the duties of each.
 2. Identify and list the required information for working in confined space on the respective permit.
 3. Establish an acceptable retrieval system on a confined space worksite.
 4. Select the proper air monitoring equipment and maintain continuous operation.
 5. Select the necessary tools required for confined space work and operate in a safe manner.
 6. Perform the duties required on the jobsite and employ warning alarms during execution.
 7. Follow safety protocol during work scope and evacuation.
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Methods of Evaluation:

1. Tests
2. Quizzes
3. Class participation

Course Content Outline:

1. Confined space: hazards, health effects and PPE
 - a. Terminology
 - i. Confined space
 - ii. Air purifying respirator
 - iii. Exposure limit
 - iv. Carcinogen
 - v. Maximum use limit
 - vi. Material safety data sheet
 - vii. Supplied air respirator
 - viii. Threshold limit
 - ix. Time weighted average
 - x. Ground fault circuit interrupter
 - b. OSHA regulations
 - i. Permit required
 - ii. Air monitored
 - iii. PPE
 - iv. Environmental hazards
 - v. Worker protection
 - vi. Written plan
 - vii. Rescue
 - c. Confined space
 - i. Silo
 - ii. Holding tank
 - iii. Pipeline
 - iv. Manhole
 - v. Vault
 - d. Hazards

- i. Entrapment
 - ii. Engulfment
 - iii. Oxygen deficiency
 - iv. Oxygen enrichment
 - v. Toxins
 - vi. Physical
- e. Health effects
 - i. Respiratory
 - ii. Circulatory
 - iii. Local
 - iv. Caustic burns
- f. Temperature extremes
 - i. Heat
 - ii. Freezing
- g. PPE
 - i. Respirator
 - ii. Tyvec suit
 - iii. Gloves
 - iv. Boots
 - v. Eye protection
- 2. Respirators
 - a. Requirements
 - i. Air monitoring
 - ii. Visual
 - iii. Past experience
 - b. Types
 - i. Half face air purifier
 - ii. Full face
 - iii. Powered air
 - iv. Atmosphere supplied
 - v. SCBA
 - c. SCBA
 - i. Air bottle
 - ii. Closed circuit
 - iii. Open circuit
 - iv. Pressure demand
 - v. Use
 - 1. High air bourn concentrates
 - 2. Oxygen deficient
 - d. Protection factors
 - i. Ten parts per million
 - ii. Fifty parts per million
 - iii. Thousand parts per million
 - iv. Ten thousand parts per million
 - e. PEL
 - i. Chemical exposure
 - ii. Pocket guide
 - iii. Determination
 - iv. OSHA determined
 - v. Respirator selection
 - f. Isolation
 - i. Lock out
 - ii. Tag out
 - iii. Energy separation
 - iv. Air purging
 - 1. Determination
 - 2. Solution
 - g. Air monitoring

- i. Purpose
 - 1. Gas detection
 - 2. Chemical detection
 - ii. Oxygen concentration
 - 1. High
 - 2. Low
 - iii. Flammability
 - iv. Toxins
3. Application
- a. Confined space identification
 - i. Work space
 - ii. Egress
 - iii. Occupancy limits
 - b. Permit required confined space
 - i. Limited openings
 - ii. Hazardous atmosphere
 - iii. Engulfment potential
 - iv. Entrapment potential
 - v. OSHA required
 - c. Permit items
 - i. Location
 - ii. Times
 - 1. Start
 - 2. Finish
 - iii. Date
 - iv. Potential hazards
 - 1. Electrical
 - 2. Atmospheric
 - 3. Toxins
 - v. Control measures
 - 1. Electrical
 - a. Lock out
 - b. Tag out
 - 2. Atmospheric
 - a. Isolation
 - b. Purging
 - vi. Atmospheric testing
 - 1. Substance
 - 2. Acceptable range
 - 3. Testing equipment
 - vii. Communication method
 - viii. Emergency numbers
 - ix. Rescue procedures
 - x. PPE
 - xi. Roster
 - 1. Time in
 - 2. Time out
 - xii. Attendants
 - xiii. Supervisor
 - xiv. Signature
 - d. Retrieval system
 - i. Tripod
 - ii. Body harness
 - iii. Lanyards
 - iv. Cable system
 - e. Tools
 - i. Hand tools
 - ii. Power tools
 - iii. Job specific

- iv. Equipment
 - 1. Pneumatic
 - 2. Electrical
- f. Air monitor
 - i. Continuous operation
 - ii. Pre job
 - iii. Duration
- g. Duties
 - i. Attendant
 - ii. Rescue team
 - iii. Job specific entrants
 - iv. Entry supervisor
- h. Safety protocol
 - i. Contact personnel
 - 1. Inside
 - 2. Outside
 - ii. Response conditions
 - 1. Alarms
 - 2. Warning lights
 - iii. Evacuation destination

Resources

Drexel J. Thrash Training Center. *Confined Space Entry Training*. current. Howard, Ohio; Drexel J. Thrash Training Center, 2010.

Graham, Rosaline; Rowley, Linda. *Occupational Safety and Health*. current. Orland Park, FL; American Technical Publishers, 2014.

Yates. *Safety Professional*. second. Boca Raton, FL; CRC Publishers, 2015.

Resources Other

"NIOSH Pocket Guide to Chemical Hazards"

<http://www.cdc.gov/niosh/npg/>

Top of page

Key: 406