

ATLB-1250: ASBESTOS ABATEMENT WORKER

Cuyahoga Community College

Viewing: ATLB-1250 : Asbestos Abatement Worker

Board of Trustees:

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Academic Term:

Fall 2021

Subject Code

ATLB - AIT-Construct/Hazard Material

Course Number:

1250

Title:

Asbestos Abatement Worker

Catalog Description:

Certification course covering the properties and general uses of asbestos including its history and various work classifications used in construction and building maintenance. The different types of respirators and personal protection equipment used for worker protection while working in an asbestos environment is included. In addition the purpose of asbestos containment required by the Environmental Protection Agency EPA and state regulating bodies, the construction of containment units and abatement techniques is a part of this course.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval and a member in good standing with LIUNA.

Outcomes

Course Outcome(s):

Discuss the properties and general uses of asbestos and its history and list and explain the work classifications in construction and building maintenance.

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. List and define the terms related to asbestos in the construction industry.
2. Describe the properties of asbestos including fiber length in microns, aerodynamic qualities and chemical atomic structures.
3. Explain the relationship between smoking and asbestos exposure effects on the worker.
4. Differentiate between friable and non-friable asbestos.
5. Identify and describe the classifications of asbestos work.
6. List and explain the different uses of asbestos including those common in the construction industry.
7. Identify worker rights and responsibilities when working with asbestos.

Course Outcome(s):

Identify and describe the different respirators used for worker protection in an asbestos environment, including APR limitations and demonstrate practices followed for specific respirator disassembly, assembly, and cleaning.

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. List and define terms related to respiratory protection.
2. Identify the different respirators used by the asbestos abatement worker and describe the use of each.
3. Differentiate between APR and SAR respirators.
4. List the limitations of air purifying respirators.
5. Demonstrate the ability to properly maintain different respirators used in asbestos abatement.
6. List and explain the procedures followed for respirator fit test in accordance with industry standards.

Course Outcome(s):

Discuss the purpose of decontamination on an asbestos abatement project and state steps that are followed in prepping the work area, the elements and function of the decontamination chamber and list the materials and equipment are used.

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. List and define the terms related to asbestos abatement and containment units.
2. List and explain the twelve steps that are followed in prepping a work area.
3. Explain the purpose and function of negative air pressure in a decontamination unit.
4. Identify and list the materials and equipment used to construct an asbestos abatement containment.
5. Demonstrate the ability to safely erect containment using proper materials and equipment, including negative air machines, in accord with industry standards.

Course Outcome(s):

Discuss the importance of air sampling, "aggressive and area", analytical methods used and describe the respective limitations.

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. Explain how and why air sampling is done on an asbestos project.
2. List the two analytical methods used in final clearance of asbestos abatement projects.
3. Differentiate between static and aggressive sampling.
4. Describe bulk sampling, settled dust sampling and wipe sampling methods.
5. List and explain the limitations of analytical methods used in asbestos abatement.
6. Explain the purpose of taking air sampling from outside the work area and from outside the building.

Methods of Evaluation:

1. Class participation
2. Quizzes
3. Test

Course Content Outline:

1. Asbestos: properties, health hazards, and regulations
 - a. Terminology
 - i. ACM
 - ii. EPA
 - iii. Asbestos fiber
 - iv. Friable asbestos containing material
 - v. Micron
 - vi. Non-friable

- vii. OSHA
- viii. PACM
- ix. PEL
- x. SM
- xi. TSI
- xii. Aerodynamic
- xiii. Carcinogen
- xiv. Latency period
- xv. Synergism
- xvi. Chrysotile
- xvii. Amosite
- xviii. Macrophages
- xix. Wet removal
- b. Asbestos properties
 - i. Heat resistant
 - ii. Water repellent
 - iii. Friable
 - iv. Non-friable
 - v. Mineral
 - vi. Non-disease
- c. Smoking and asbestos effects
 - i. Synergism
 - 1. Exposure
 - 2. Smoking
 - ii. Oxygen exchange
 - iii. Cilia relaxation
- 2. Friable vs. non-friable
 - a. Friable
 - i. Easily crushed
 - ii. Powder
 - iii. Dangers
 - 1. Fibers easily released
 - 2. Inherent health danger
 - b. Non-friable
 - i. Difficult to pulverize
 - ii. Firm matrix
 - iii. Less hazardous
- 3. Work classifications
 - a. Class I
 - i. Surfacing materials
 - 1. Decorative plaster
 - 2. Acoustic materials
 - 3. Fireproofing
 - ii. Thermal system insulation
 - 1. Pipes
 - 2. Boilers
 - 3. Tanks
 - 4. Ductwork
 - b. Class II non surface
 - i. Non friable
 - ii. Floor tile
 - iii. Roofing
 - iv. Transite
 - c. Class III
 - i. Glove box inclusion
 - ii. Intentional disturbance of ACM
 - d. Class IV
 - i. Maintenance
 - ii. Custodial

4. Construction uses
 - a. Temperature management
 - i. Heat
 - ii. Cool
 - b. Brake linings
5. Building materials
 - a. Ceilings
 - b. Drywall
 - c. Fireproofing
 - d. Roofing
 - e. Trancite
 - f. Siding
 - g. Tile
 - h. Mastic
6. Drugs
7. Fireproof clothing
8. Baby powder
9. Worker rights/responsibilities
 - a. Worker rights
 - i. Employee representative
 - ii. Standard/regulation review right
 - iii. Access to medical and exposure records
 - iv. Request safety and health hazard information
 - v. Review log summaries
 - vi. Request OSHA inspection
 - vii. Right to assist OSHA compliance official
 - viii. Observe monitoring and review results
 - ix. Contest abatement period
 - x. Report imminent danger
 - xi. Report hazards
 - xii. Exercise OSHA rights
 - xiii. File discrimination complaint
 - b. Responsibilities
 - i. OSHA familiar
 - ii. OSHA compliant
 - iii. Follow employer rules/regulations
 - iv. Wear PPE
 - v. Report hazards
 - vi. Report job related injuries/illnesses
 - vii. Cooperate
 - viii. With OSHA compliance officer
 - ix. Exercise rights under OSHA Act 1970
10. EPA standards
 - a. National Emissions Standard for Hazardous Air Pollutants - NESHAP
 - i. No visible emissions
 - ii. Prior notification guideline
 - iii. Wet removal
 - b. Asbestos Hazard Emergency Response Act - AHERA
 - i. Training and certification
 1. Inspectors
 2. Planners
 3. Designers
 4. Supervisors
 5. Workers
 - ii. Re-inspection
 - iii. Surveillance
 - c. Asbestos School Hazard Abatement Reauthorization Act - ASHARA

- i. Amendments public/commercial buildings
 - ii. Model accreditation plan revision
 - iii. Increase training hours
 - iv. Increase hands on training
- 11. Respirators and applications
 - a. Terminology
 - i. Half face
 - ii. Full face
 - iii. PAPR
 - iv. SAR
 - v. SCBA
 - vi. Respirator
 - vii. Filter
 - viii. Cartridge
 - ix. Short term entry
 - x. Oxygen deficient
 - xi. Air purifying
 - xii. NPR
 - xiii. Filter efficiency
 - xiv. Contaminate
- 12. Respirators
 - a. Half face
 - i. Low level contaminate
 - ii. Limited respirator requirement
 - iii. Durability
 - iv. Eye protection
 - v. Filters
 - 1. Non- oil resistance NRP
 - 2. Resistant to oil R
 - 3. APF 10
 - 4. Filter efficiency
 - a. 95% protection
 - b. 99% protection
 - c. 100% protection (99.97%)
 - d. Air purifying
 - b. Full face
 - i. Greater protection
 - ii. APF 50
 - iii. Eye protection
 - iv. Forehead seal
 - v. Air purifying
 - c. Powered Air Purifying Respirator - PAPR
 - i. APF 1000
 - ii. Higher protection/contaminant level
 - iii. Air purifying
 - d. Supplied air
 - i. Air line
 - 1. Longer time duration
 - 2. Higher level of contaminate
 - 3. Oxygen deficient atmosphere
 - 4. Escape bottle
 - ii. Self-Contained Breathing Apparatus - SCBA
 - 1. Heavy
 - 2. Limited air time
 - 3. PF 10,000
 - 4. Short term entry
- 13. APR vs SAR

- a. APR
 - i. Lower contaminate level
 - ii. Sufficient ambient oxygen
- 14. SAR
 - a. High contaminate level
 - b. Oxygen deprived
- 15. APR limitations
 - a. Cannot be used in oxygen deficient area
 - b. Lack of eye protection
 - c. Limited contaminate area
- 16. Respirator maintenance
 - a. Disassemble
 - b. Cleaning
 - i. Alcohol free cleaner
 - ii. Inspect for defects/damage
 - c. Re-assembly
 - d. Storage
 - i. Sealed bag
 - ii. Low humidity environment
 - iii. Avoid heat environment
- 17. Fit test
 - a. Sensitivity check
 - b. Positive/negative seal check
 - c. Smoke infiltrative irritant
 - d. Irritant agents
 - i. Smoke
 - ii. Stannic acid
 - iii. Banana oil
 - iv. Bittrex
 - v. Saccharin
- 18. Containment: area prep
 - a. Terminology
 - i. Abatement
 - ii. Critical barrier
 - iii. Containment
 - iv. Common tools
 - v. Overlap requirements
 - vi. General considerations
 - vii. Travel flow
 - viii. Strategies
 - ix. Negative air
 - x. Millage
 - xi. Chamber
 - xii. Wet wipe
 - b. Prepping steps
 - i. Vacate area
 - ii. Wet wipe
 - iii. Critical barriers
 - 1. Heating ventilating and air conditioning (HVAC)
 - 2. Electrical
 - 3. Doors
 - 4. Windows
 - 5. Penetrations
 - iv. Layering
 - 1. Floor
 - 2. Walls
 - 3. Lap
 - a. 12"
 - b. 36"

- 4. Wall layer down
 - 5. Drop cloth
 - v. Establish negative air
 - vi. Walk through
 - vii. Commence abatement
 - c. Negative air
 - i. Calculation
 - 1. Room dimensions, volume
 - 2. Capacity of negative air machine
 - ii. Four air changes/hour
 - iii. Purpose
 - 1. Fiber containment
 - 2. Safe work place
 - d. Materials and equipment
 - i. Materials
 - 1. Polyvinyl chloride sheathing
 - 2. Duct tape
 - 3. Spray glue
 - ii. Tools (hand)
 - 1. Knives
 - 2. Scrapers
 - 3. 5 in 1 scraper
 - 4. Aviation snips
19. Equipment
- a. Scaffold
 - i. Rolling
 - ii. Tube and clamp
 - iii. Systems
 - b. Negative air machine
 - c. Lifts
 - i. Scissors
 - ii. Aerial
20. Containment construction
- a. Prepare area(s)
 - i. Remove unsecured items
 - ii. Wipe clean
 - b. Critical barriers
 - c. Layers
 - i. Floors
 - ii. Walls
 - d. Penetrations
 - e. Inspection
 - i. Negative air
 - ii. Seal tight
 - f. Abatement process
21. Air sampling, analytical methods and limitations
- a. Purpose: how and why
 - i. How
 - 1. air movement
 - 2. blower
 - 3. fan
 - 4. "eddy" current
 - ii. Why
 - 1. Fiber level determination
 - 2. Determination of safe levels
 - b. Analytical methods
 - i. Phase contrast microscopy
 - ii. Light microscopy
22. Static versus aggressive sampling

- a. Static
 - i. Stationary
 - ii. Final sampling
 - iii. Greater accuracy
 - iv. Longer sampling time
 - b. Aggressive
 - i. Artificial agitation of air
 - ii. Lower
 - 1. Air sample
 - 2. Less time
 - iii. Less time
 - iv. Quick analysis
23. Bulk sampling, settled dust and wipe
- a. Bulk sample
 - i. Random sampling
 - ii. General overview
 - b. Settled dust
 - i. Horizontal ledges
 - 1. Tables
 - 2. Soffits
 - 3. Ledges
 - 4. Miscellaneous
 - ii. Obvious settlement
 - c. Wipe sampling
 - i. General random
 - ii. Follow up sampling
 - iii. Special considerations
24. Limitations
- a. Time
 - b. Money
25. Outside sampling
- a. Data comparison
 - b. Baseline setting
 - c. Result driven

Resources

LIUNA Training a.LiUNAttraining.org. *Asbestos Abatement Worker*. "Asbestos Abatement Worker" LLIUNA Training and Education Fund 37 Deerfield Road, Pomfret CT 06259, 2018.

United States Government. *29 CFR 1926 OSHA Construction Industry Regulations Subpart Z Toxic and Hazardous Substances*. OSHA .gov Washington DC,

National Resource Center/Center for Construction Research and Training. *Asbestos Safety*. U S gov.org 8484 Georgia Avenue Suite 1000 Silver Spring, MD 20910, 2018.

Resources Other

Deadly Dust: Asbestos in the Backyard (Video, available via YouTube)

The Evil Dust- The History of Asbestos, an excerpt (Video, available via Youtube)

Ohio Administrative Code (OAC) Chapter 3745-20, "Asbestos Emission Control" (OAC)

National Resource Center/Center for Construction Research and Training

8484 Georgia Avenue Suite 1000. Silver Spring, MD 20910. (301) 495.8524 www.CPWR.com (<http://www.CPWR.com>)

29 CFR 1926 OSHA Construction Industry Regulations

Subpart Z Toxic and Hazardous Substances (.1101 Asbestos) (800) 321.OSHA www.OSHA.gov (<http://www.OSHA.gov>)

<https://epa.ohio.gov/dapc/atu/asbestos> (<https://epa.ohio.gov/dapc/atu/asbestos/>)

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