

**ASBESTOS 2 HOUR CLASS IV TRAINING
UPDATED 4/14/04**

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COURSE OVERVIEW:

This is a basic course in asbestos awareness for the individual who has no prior asbestos training. The duration is two hours:

1. Information regarding asbestos and its various uses and forms and location of ACM in building..
2. Information on the health effects associated with asbestos exposure.
3. Recognition of damage, deterioration, and delamination of ACM.
4. For School staff: Location of the management plan and name and phone number of the asbestos coordinator.

This course meets the current OSHA requirements for workers doing routine custodial and maintenance work in buildings with asbestos (Class IV work). This course does not authorize the individual to remove or repair asbestos containing materials (ACM) or to perform consulting work such as collecting samples.

This course includes video or slides presentation and lecture and a quiz.

Each person must complete all 2 hours of the training in order to obtain documentation from the provider that the course was completed.

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SECTION 1

BACKGROUND INFORMATION ABOUT ASBESTOS

A. HOW TO RECOGNIZE ASBESTOS CONTAINING MATERIALS: (ACM)

1. Materials Which Must be Treated as ACM Unless Proven Otherwise:

a. Surfacing

- 1) Plaster and other troweled on materials
- 2) Sprayed on surfacing

b. Thermal System Insulation (TSI)

- 1) Pipe insulation
- 2) Boiler and tank insulation
- 3) Duct and other insulation

c. Common Miscellaneous Materials

- 1) Floor tile, linoleum and the mastic underneath
- 2) Transite sheets and pipes
- 3) Acoustical panels such as ceiling tiles
- 4) Glues, putties, grouts and tars
- 5) Roofing felts
- 6) Cloth such as used in duct vibration control
- 7) Preformed boards
- 8) Electrical insulation

2. Lab Analysis for Asbestos

a. PLM

b. Lab must be properly Accredited

c. < 1 % asbestos

3. Physical Appearance

a. Naturally occurring minerals.

b. Bundles of minute fibers

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B. HOW TO RECOGNIZE DAMAGE TO ACM

1. Debris in building areas where ACM is located. ACM debris means pieces of ACM that can be identified by color, texture, or composition, or dust, if the dust appears to have come from the ACM.
2. Obvious punctures, gaps, torn covers, or delamination. Delamination means when layers pull away from the material to which they are attached (substrate).
3. Flaking, blistering, or crumbling of the ACM surface
4. Water damage - significant or repeated water stains.
5. Scrapes, gouges, mars or other signs of physical injury on the ACM.

C. TYPES OF ASBESTOS:

There are six different asbestos minerals:

Chrysotile White Asbestos

Most common form of asbestos

Wavy fibers

93 percent of total domestic Asbestos products

40 % of U.S. land has some amount of this asbestos

The other 5 are called Amphiboles and all have straight rigid fibers:

Amosite - Brown Asbestos

5% of asbestos used

Crocidolite -Blue Asbestos

2% of asbestos used

Anthophyllite, Actinolite and Tremolite- Rarer types of asbestos

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D. WHY ASBESTOS WAS USED

Thermal insulating ability	Inexpensive
Virtually indestructible	Mechanical strength
Chemical resistance	Flexibility
Fire resistance	Friction and wear resistance
Wet strength	Acoustical properties

E. WHY SPECIAL PRECAUTIONS ARE NEEDED FOR ASBESTOS FIBERS

1. Flight Characteristics and Settling Time

- a. Many millions of fibers in a small handful
- b. All types can get airborne with little force.
- c. Fibers may stay in the air for days.
- d. Fibers can follow air currents through a building.

2. Can't Detect without Air Testing

- a. Not visible to naked eye
- b. No odor
- c. No irritation or other tangible signs of exposure
- d. Only air sampling and analysis using microscopic methods can detect the presence of these fibers.

3. Wavy Chrysotile vs the Straight (Amphibole) Asbestos Types:

- a. Chrysotile is harder to get airborne than Amphiboles.
 - 1) Absorbs water which makes it heavier when wet
 - 2) Wavy structure resists release
 - 3) Adheres tightly to binders
- b. Amphiboles such as amosite get airborne with ease.
 - 1) Do not absorb water
 - 2) Straight brittle structure increases release

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4. Other factors:

- a. Erosion
- b. Abrasion
- c. Vibration
- d. Wet residues that become dry

F. USES AND LOCATIONS OF ASBESTOS

1. General Information:

- a. 3,600 products since the early 1900's.
- b. 90,000 tons of asbestos per year still used in the USA.
 - 1) Still possible to encounter asbestos in new building materials.
 - 2) Specify "Asbestos Free" materials for new installations.

2. "Transite" Asbestos cement products: A miscellaneous material

- a. 65 percent of all asbestos used, A hard and tough flexible cement.
- b. Mostly chrysotile. Rarely amosite and crocidolite.
- c. Two major forms:
 - 1) Flat or corrugated sheets
 - a) Siding
 - b) Tiles
 - c) Insulating board
 - 2) Pipe
 - a) Rainwater drains
 - b) Gutters
 - c) Pressure piping including water mains = largest single use.

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3. Major Building Uses:

a. Flooring: A Miscellaneous Material. Usually chrysotile. Found in finished areas

- 1) Mastic (still used)
- 2) Floor tiles (rarely used after 1989)
- 3) Linoleum (top layer or felt backing up to 1989)

b. Thermal Insulation:

Pipes, ducts and vessels: Rarely used after 1980. Retards heat loss or gain

- 1) Boiler rooms
- 2) Other mechanical rooms
- 3) Steam tunnels
- 4) Pipes and HVAC ducts throughout building leading to:
 - a) Radiators
 - b) Registers
 - c) Fixtures

c. Fireproofing and Structural uses in Condensation Control:

Surfacing on steel beams and decking: Rarely used after 1980. Delay or prevent collapse of structures in fires.

Applied to steel and concrete to minimize condensation.

d. Acoustical: Used extensively prior to the 1970's.

Surfacing on ceilings and sometimes walls: Rarely used after 1980.

Ceiling tiles and panels

e. Roofing: Rarely used after 1980.

- 1) Flashing
- 2) Built up roof
- 3) Felts or tar

f. Transite panels: Rarely used after 1980. Frequently seen behind radiators and in siding

g. Electric cable insulation and lighting fixtures

h. Glues and putties

i. Preformed boards

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4. Special Building Uses:

- a. Amosite: High temperature applications
 - 1) Steam boilers and lines
 - 2) Exhaust fire boxes
 - 3) Power plants generating high pressure steam.
- b. Crocidolite: Very resistant to acids and to outdoor exposure.
- c. Chrysotile and crocidolite are used in Asbestos textiles and filtration products.
- d. Anthophyllite, actinolite, and tremolite are used primarily in adhesives and cements. They are too brittle for textile products or for use as fibrous reinforcement. Actinolite and tremolite also exist in non-fibrous forms.

5. Major Non - Building Uses:

- a. Brake linings
- b. Clutch facings
- c. Gaskets
- d. Reinforced plastics.
- e. Appliances

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G. DATES OF USE OF ASBESTOS

USES	DATES OF USE
Friable-Insulating Spray-applied insulation, or troweled on	1935 - 1978
Preformed Thermal Insulating Products Bats, blocks and pipe covering	1925 - 1949
Textiles Cloth, blankets, felts, sheet, cord, rope, yarn, tubing, tape/strip, curtains	1920 - Present
Cementitious Products, Extrusion, panels, pipe	1930 - Present
Paper Products, Corrugated millboard	1910 - Present
Roofing Felts smooth or mineral surface, shingles, pipelines	1910 - Present
Asbestos Containing Caulking putties, Joint compounds, Roofing asphalts, mastics, asphalt tile roof putty, plaster, stucco, sealants, cement.	1920 - Present
Asbestos in Portland Cement (Ebony Products)	1930 - Present
Flooring Tile and Vinyl asbestos tile Sheet Goods, asphalt asbestos tile	1950 - 1989
Wall Covering, Vinyl Wallpaper	1920 - Present
Paints and Coatings, Roof coating,	1900 - Present
Surfacing Materials including Plaster and Sheetrock	1900 - 1989

SECTION 2

POTENTIAL HEALTH EFFECTS RELATED TO ASBESTOS EXPOSURE

A. NATURE OF ASBESTOS RELATED DISEASES

1. Major Diseases:

ASBESTOSIS: -

Associated with breathing large amounts of asbestos.

A restrictive lung disease.

Scarring of the lungs seen on x-ray.

Shortness of breath.

Advanced disease can cause disability and death.

A progressive lung disease, which means that it can progress even after exposure is discontinued.

Prevention and early detection are important. In addition to chest x-rays, pulmonary function tests and exposure history are important for accurate diagnosis.

The latency period for Asbestosis is 5 - 10 years with very heavy exposure. Otherwise it may be 20 - 40 years. Latency means the period of time between exposure and onset of disease.

LUNG CANCER: - abnormal cell growth

Asbestos is a known human carcinogen.

Risk of disease increases with increase in amount of exposure.

No "safe" dose, at which the risk of lung cancer, is zero.

Latency period > 15 years, with a peak at 30-35 yrs.

MESOTHELIOMA: - a rare form of cancer of the chest or stomach, associated only with Asbestos exposure.

Almost incurable form of cancer.

Associated with low levels of Asbestos exposure.

Latency period for mesothelioma is up to 40 years.

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2. Minor Occurrence of Diseases:

Gastrointestinal cancers

esophagus
stomach
colon

Pleural Diseases - Less Serious Disease,

Thickening or scarring of the pleural tissues which normally have no symptoms but indicate Asbestos exposure

B. ROUTES OF EXPOSURE TO ASBESTOS FIBERS.

1. Lung diseases caused by inhalation (breathing)

Defenses: Most particles, including Asbestos fibers, are trapped and eliminated by the defense mechanism.

Breathing passages lined with a sticky mucous layer that traps small particles.

Cilia line the bronchial tubes. These are hair-like projections that continuously move the mucous layer toward the mouth.

But some Asbestos fibers can be carried along in the air, down the bronchial tubes, and lodge in the lung tissue where they may remain.

Some fibers break into small fragments and are eliminated from the body. Small chrysotile fibers can dissolve in the lung and be more readily eliminated.

2. Less common gastrointestinal diseases caused by ingestion.

C. EFFECT OF CIGARETTE SMOKING ON ASBESTOS EXPOSURE

- Incidence of lung cancer much higher among smokers also exposed to Asbestos.
- Smokers not exposed to Asbestos ten times that of non-exposed, non-smokers.
- Non smoking workers are exposed to asbestos have a risk of approximately five (5) times that of non-exposed, non-smokers.
- However, the combination (synergistic) effect, among smokers who are also exposed to Asbestos, is 50 - 90 times that of non-exposed, non-smokers.
- Cigarette smoke has numerous other adverse effects.
- Stop smoking - risk of lung cancer can decrease to close to that of a non-smoker.

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D. OTHER PROPERTIES

1. Signs of exposure to Asbestos:

No way to tell except:

By personal air monitoring or

Knowing that Asbestos is being disturbed in the area.

2. Fiber size and shape:

Fibers longer than 5 microns and thinner than 0.5 microns appear to be more carcinogenic than shorter and thicker fibers. A micron is a millionth of a meter.

Fibers longer than 8 microns are not generally respirable and much less dangerous.

Therefore, thin fibers between 5-8 microns long are the worst.

The OSHA method for asbestos in air only counts fibers lon

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SECTION 3

OVERVIEW OF KEY REGULATIONS

Section 6-1

Principal U.S. EPA Asbestos Regulations

A. EPA

1. AHERA Asbestos Hazard Emergency Response Act 1 Covers Schools public or private grades k-12

- a. EPA Accreditation required for individuals: Abatement Workers; Supervisors and Monitors; Inspectors; Management Planners, and Project Designers.
- b. 2 hr awareness training for custodial and maintenance workers within 60 days of hire.
- c. Signs in routine maintenance areas.
- d. Can assume materials are ACM or collect bulk samples of materials and submit to NIST Accredited Lab for PLM analysis. Damaged assumed ACM must be tested
- e. Periodic Surveillance every six months and Annual notification to PTO.

2. NESHAP National Emission Standards for Hazardous Air Pollutants.

- a. Covers practically all facilities.
- b. MUST inspect for asbestos prior to any demolition or renovation project
- c. Notification Requirements
- d. Emission controls.
 - 1) No visible emissions
 - 2) Wet removal
- e. Waste disposal regulated
- f. Asbestos must be removed:
Before demolition or renovation if disturbance is possible.

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B. OSHA ASBESTOS STANDARD

1. Covers all construction, transportation, disposal and maintenance-related work involving asbestos. These are divided into four classes of work:

Class I work = TSI and surfacing removal of ACM.

Class II work = Removal of ACM other than TSI and surfacing

Class III work = Repair of ACM, in small quantity.

Class IV work = maintenance and custodial including work in general industry or construction industry associated with Class I, II and III work, i.e., custodial and maintenance work is Class IV work only if associated with a construction asbestos project.

2. OSHA Sets procedures for each class of work.

a. Demarcation including signs on regulated areas where asbestos disturbance occurs.

b. Limited Access (to authorized persons)

c. Respirators and protective clothing

1) Class I II and III work

2) Class IV work in regulated areas.

d. Prohibited activities

No one can eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated area.

e. Personal monitoring

f. Permissible Exposure Limit (PEL): 0.1 f/cc, 8 hour TWA

g. Excursion Limit (EL) 1.0 f/cc, 30 minute monitoring during each day's peak work disturbing asbestos in each Work Area

h. Personal Air Sampling Required daily for Class I, II and for Class III jobs.

i. Hygiene Facilities and Practices: "Decons" for Class I/II

j. Requirements for Class IV work.

Employees performing Class IV work within a Class I, II or III area must comply with the respective hygiene practice required within that area, In most cases additional training including respirators is required for the Class IV workers.

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k. Medical Surveillance required for use of a negative pressure respirator or in most cases for Class I, II & III work.

l. Training Requirements:

- 1) Class I and II work 32- 40 hours
- 2) Class III work = 16 hours
- 3) Class IV work = 2 hours

m. Floor Maintenance- Housekeeping requirements:

Practices for ACM/PACM floor: sanding prohibited, stripping done with low abrasive pads below 300 RPM plus wet methods, burnishing and dry buffing done only over enough wax to prevent contact with the floor.

C. OSHA HAZARD COMMUNICATION PROGRAM FOR THE CONSTRUCTION INDUSTRY (CFR 29 1926.59) DEALS WITH CHEMICAL HAZARDS IN THE WORK PLACE.

D. RESPIRATORY PROTECTION STANDARD OSHA 29 CFR 1910.134

E. DPH ASBESTOS STANDARD: 19A 332-1 THROUGH -16

1. Applicability:

- a. All Interior Work
- b. Includes all structures even single family homes and ships in dry dock.

2. Asbestos Project:

≥ 3 sq ft or 3 linear ft of asbestos material

3. Spot Repair:

< 3 sq ft or 3 linear ft of asbestos material

4. Notification:

10 day notification to DPH required when:

- a. >10 lin ft or 25 sq ft of interior ACM or exterior friable ACM and
- b. For any demolition

F. DPH LICENSING AND TRAINING REQUIREMENTS

Connecticut General Statutes Sec 22a-209-8 (i) (DEP Applies to Waste Disposal in Connecticut)

G. DEP DISPOSAL REQUIREMENTS

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Course Quiz

Name of trainee (Print) _____ Date _____

Social Security # _____

Answer all 4 questions. This quiz is to evaluate your comprehension of the key points covered.

NOTE: Circle the letter by the correct answer. Do not circle more than one. Make the choice that best answers the question.

1. Which of the following are asbestos related diseases?
 - a. Mesothelioma
 - b. Lung Cancer
 - c. Asbestosis
 - d. All the above

2. Which of the following are possible asbestos containing materials?
 - a. Pipe insulation
 - b. Sprayed on surfacing material
 - c. Floor tile
 - d. All the above

3. How can you recognize damage to asbestos?
 - a. Holes in the material or dust or debris in the area.
 - b. A green color
 - c. Damage can't be recognized.

4. Asbestos is dangerous because_____.
 - a. It goes through the skin
 - b. You can breathe it when it is in the air and may get a disease.
 - c. It is flammable