

ASBESTOS AWARENESS TRAINING OUTLINE

Asbestos Awareness Training is very important for employees whose work activities may contact asbestos containing material (ACM) or presumed asbestos containing material (PACM) but do not disturb the ACM or PACM during their work activities. This training consists of information regarding asbestos and its various uses and forms. Training also includes information on the health effects associated with asbestos exposure. This course includes available information concerning the locations of thermal systems insulation and surfacing ACM/PACM, and asbestos containing flooring material, or flooring material where the absence of asbestos has not yet been certified, and instruction in recognition of damage, deterioration, and delamination of ACM.

I. ASBESTOS: IT'S VARIOUS FORMS & USES

- A. Asbestos is a combination of minerals (chrysotile, amosite, and crocidolite, and the asbestos forms of tremolite, actinolite and anthophyllite obtained from mines.) Its ability to separate into thin, strong particles makes it highly suitable for use as a noncombustible, nonconducting, and chemically resistant material. In its natural state, asbestos is a fluffy, fibrous material.
- B. Asbestos was first used in the 1880's as insulation for steam pipes (pipe covering). During the 20th century, the construction industry used asbestos for cement products, roofing, plastics, insulation, and floor tiling. Asbestos is also used for fireproof clothing, fire-resistant curtains, automotive undercoating, brake and clutch linings and nose cones of space vehicles.
- C. Asbestos cannot be recognized by ordinary observation; a sample must be tested in a laboratory utilizing polarized light microscopy (PLM) or an electron microscope.
- D. Commonly used terms:
 - 1. ACM: Asbestos Containing Material
 - 2. Accredited: A person licensed by the state.
 - 3. Amosite: Brown asbestos from Africa, second most commonly used form.
 - 4. Class I, II, III, & IV: OSHA designations for class/category of asbestos related work used to determine proper work procedures and training requirements.
 - 5. Chrysotile: White asbestos, most commonly used form.
 - 6. Crocidolite: Blue asbestos, least often used, considered by some to be most dangerous form.
 - 7. Disturbance: Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM.
 - 8. Encapsulation: The sealing of friable asbestos materials by means of the spraying of liquid sealant or any other suitable sealing method.
 - 9. Fiber: A particulate of ACM, 5 micrometers long and length to diameter ratio of 3 to 1.
 - 10. Friable: ACM when dry, can be crumbled, pulverized or reduced to powder by hand pressure.
 - 11. Latency period: Time between 1st exposure and appearance of disease.
 - 12. PACM: Presumed asbestos containing material.

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- 13. Removal: All operations where ACM and/or PACM is taken out or stripped from structures or substrates and includes demolition operations.
- 14. Repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

II. HEALTH EFFECTS ASSOCIATED WITH ASBESTOS EXPOSURE

A. How the Respiratory System Functions

- 1. Air enters through the nose and mouth. Large particles are filtered out of the air by the nose hairs.
- 2. As air passes down the trachea and the bronchi, tiny particles are trapped by the mucous lining. These particles are transported by cilia to the throat where they are either expelled or swallowed.
- 3. Next, the air reaches the alveoli. At this point, oxygen is transferred to the blood and carbon dioxide is transferred out of the blood to be expired. Particles that reach the alveoli may be attacked and removed by macrophages or immunoglobulin antibodies.

B. Two Kinds of Asbestos Contamination:

- 1. Visible dust
- 2. Invisible, airborne fibers (the real threat).

NOTE: Asbestos must be airborne in order to be considered a health hazard.

C. How Asbestos Affects the Lungs

- 1. Asbestos breaks down into the smallest fibers known to man. When inhaled into the lungs, these tiny, indestructible, needle-like fibers insert themselves between the cells of the lung walls. The fibers interact with the cells, causing fibrosis of the tissues or interrupting internal cellular processes that cause the cells to erupt in uncontrollable growth. This uncontrollable growth is known as cancer.
- 2. The danger of working with asbestos varies with:
 - a) Intensity of exposure.
 - b) Individual susceptibility.
 - c) Fiber size (very fine, short fibers are most dangerous).
 - d) Presence of other pollutants.
- 3. Asbestos is a slow acting or chronic (versus a fast acting or acute) toxin within a latency period of 5 to 30 or more years. A latency period is the time between the first exposure and the appearance of the initial symptoms of disease.

D. Diseases Related to Asbestos.

- 1. Asbestosis: is not a form of cancer. It is a scarring of the lungs that causes difficulty in breathing by reducing the surface area of the lungs. This reduction in surface area decreases the amount of carbon dioxide and oxygen that can be exchanged by the lungs, producing an asthmatic-type condition. The reduction in oxygen being transferred to the blood places a burden on the heart that could cause it to fail. Asbestosis can be detected by a chest x-ray.
- 2. Bronchogenic (Lung) Cancer: is an uncontrollable cellular growth of the lung tissue. Persons working with asbestos are subjected to about a 5 times greater risk of contracting this disease than people who don't work with asbestos.

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Smokers who work with asbestos increase their risk of contracting lung cancer by about 90 times. It is strongly suggested that people who work with asbestos and smoke, quit smoking.

3. Mesothelioma: is a rare form of cancer that affects the lining of the heart, of the chest, or abdominal cavities.
4. Gastrointestinal Cancer: is a cancer of the digestive tract. It is still a controversial issue as to whether or not asbestos causes this disease.
5. Asbestos Corns or Warts: result from chronic irritation of the skin by asbestos fibers. Usually found on the hands. Not believed to lead to skin cancer.

E. Asbestos Is a Potential Hazard For:

1. Production workers.
2. Maintenance workers.
3. Demolition workers.
4. Family and friends.

III. RECOGNITION AND LOCATIONS OF SUSPECT ASBESTOS CONTAINING BUILDING MATERIALS

Asbestos has been used in a wide variety of products, including household and building materials, such as appliances, ceilings, wall and pipe coverings, floor tiles, and some roofing materials. Basically, asbestos has been used in products for four reasons: (1) to strengthen the product material, (2) for thermal insulation within a product, (3) for thermal or acoustical insulation or decoration on exposed surfaces, and (4) for fire protection.

The amount of asbestos in these products varies widely (from approximately 1 percent to nearly 100 percent). The precise amount of asbestos in a product cannot always be accurately determined from labels or by asking the manufacturer. Nor can positive identification of asbestos be ascertained merely by visual examination. Instead, a qualified laboratory must analyze representative samples of the suspect materials.

A. Applications of asbestos.

1. Thermal system insulation.
2. Surfacing.
3. Miscellaneous.

B. Thermal System Insulation.

1. Pipes: lagging, wrap, block, mudded elbows.
2. Boilers: block and blanket.
3. Tanks: block and blanket.
4. Ducts: paper and tape.

C. Surfacing Materials – sprayed, troweled, or applied to surfaces.

1. Walls.
2. Ceiling, also glued-on type ceiling tiles.
3. Structural members.

D. Miscellaneous Materials – includes mostly non-friable materials.

1. Floor tile.
2. Ceiling tile (lay-in type).
3. Built-up roofing materials and roofing felts.

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4. Concrete siding.
5. Outdoor siding.
6. Fabrics.

IV. RECOGNITION OF DAMAGED, DETERIORATED, OR DELAMINATED ASBESTOS CONTAINING BUILDING MATERIALS

A. Damaged material:

1. The surface has crumbled or is blistered, water-stained, gouged, marred, or otherwise abraded.
2. Accumulation of power, dust or debris similar in appearance to the suspect material on surfaces beneath the material.

B. Types of potential damage.

1. The chances of future disturbance is dependent on the location of the material with respect to:
 - a) Building occupations (frequency of potential contact).
 - b) Sources of vibration.
 - c) Sources of air erosion.

V. PERSON WHO WILL CARY OUT GENERAL RESPONSIBILITIES AND LOCATION OF THE MANAGEMENT PLAN OR OPERATIONS & MAINTENANCE (O&M) PLAN

There are steps that a building owner can take to prevent asbestos fiber releases or resuspension of already-related fibers, or control fiber releases quickly and safely if they occur. O&M programs are designed to achieve both these goals. Below is a list of persons who may be responsible for a building's O&M plan.

- A. Designated person.
- B. Superintendent.
- C. School principal.
- D. Engineer.
- E. Competent person.
- F. Building/facility owner.

VI. STATE AND FEDERAL REGULATIONS

A. State Regulations

1. Michigan Public Act 135 of 1986, as amended.
 - a) Regulates licensing of asbestos abatement contractors (including exempt trade groups) and their activities.
 - (1) To receive a license from the department, an asbestos abatement contractor must:
 - (a) Employ trained and accredited workers.
 - (b) Employ at least one Contractor/Supervisor.
 - (c) Carry Michigan workers' compensation insurance.
 - (d) Follow all state and federal regulations.
 - (e) Notify of projects > 10 linear feet and/or 15 square feet.
 - (f) Pay 1% project fee.

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(2) The following trade groups are exempt from licensing requirements.

- (a) Electrical contractors
- (b) HVAC contractors.
- (c) Plumbing contractors.
- (d) Residential builders & maintenance/alteration contractors.

NOTE: These groups are exempt from licensing requirements only. They still must follow all other applicable state and federal regulations.

b) Established abatement contractor licensing board (abolished in 1992).

c) Established powers and duties of the Department of Public Health regarding asbestos (subsequently transferred to the Department of Labor and Economic Opportunity).

2. Michigan Public Act 440 of 1988, as amended.

a) The Asbestos Workers Accreditation Act provides for:

(1) Accreditation of persons who perform asbestos-related work in schools and public and commercial buildings. Accreditation is required for:

- (a) Abatement Workers.
- (b) Contractor/Supervisors (Competent Person).
- (c) Project Designers
- (d) Building Inspectors.
- (e) Management Planners (K-12 schools only).

(2) Approval of asbestos training courses. All of the above disciplines must take and pass an approved training course before conducting work in that discipline.

3. Public Act 92 of 1993.

a) The “Seller Disclosure Act.”

(1) This act took effect in January of 1994. It requires sellers of residential real estate to disclose information on various property conditions, including the presence of health and environmental hazards such as asbestos, lead paint, and radon.

4. Construction Safety Standards, Part 1 General Rules, Rule 114.

a) This rule requires employers to instruct each employee in the recognition and avoidance of unsafe conditions, and the regulations applicable to the work environment to control or eliminate any hazards or other exposures to illness or injury. Asbestos would be one such hazard.

B. Federal Regulations.

1. OSHA 29 CFR 1926.1101.

a) The Asbestos Construction Industry Standard, previously known as 29 CFR 1926.58, was amended on August 10, 1994, and, along with subsequent revisions, became effective in its entirety on October 1, 1995. This standard:

- (1) Categorizes work into four classes.
- (2) Requires regulated areas.

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- (3) Requires a “Competent Person” on-site.
 - (4) Requires employee exposure monitoring/assessments.
 - (5) Requires medical surveillance.
 - (6) Requires respiratory and clothing protection.
 - (7) Mandates training.
 - (8) Establishes work practices and engineering controls.
 - b) The four (4) classes of asbestos-related work are:
 - (1) Class I: Removal of thermal system insulation and surfacing materials.
 - (2) Class II: Removal of all other ACM (generally intact & non-friable).
 - (3) Class III: Repair and maintenance operations where ACM may be disturbed.
 - (4) Class IV: Maintenance & custodial work where ACM is contacted but not disturbed.
 - c) Training requirements are based on class:
 - (1) Class I: 32 hour Worker and 40 hour Contractor/Supervisor courses.
 - (2) Class II: Same as Class I except when removing one generic material, then only 8 hours (Flooring and roofing industries have specific requirements as set forth in settlement agreements).
 - (3) Class III: 16 hour O & M course.
 - (4) Class IV: 2 hour asbestos awareness course.
 - (5) All courses require annual refresher training.
 - d) Requires the following on multi-employer work sites:
 - (1) Informing other employers of ACM work.
 - (2) ACM hazards to be abated by the contractor who created or controls the source of ACM.
 - (3) Employees shall be protected from exposure.
 - (4) Employers shall prevent ACM fiber migration.
 - (5) General contractor has supervisory authority.
 - e) Requires building owners to notify all employers who will work within or adjacent to ACM of the presence, location, and quantity of said ACM.
 - f) Employers who discover ACM or PACM shall notify the owner and other employers within 24 hours.
2. OSHA: 29 CFR 1910.1001.
- a) The General Industry Standard applies to occupational exposure to ACM in all industries covered by OSHA except construction work and shipbuilding and repairing.
3. EPA 40 CFR Part 763 (AHERA).
- a) The asbestos Hazard Emergency Response Act (AHERA) regulates ACM inspections, management practices, and response action in K-12 grade public and private schools. All buildings are required to be inspected with follow-up inspections every 3 years and must have an in-place management plan for all ACBM response actions.

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4. EPA 40 CFR Part 763 (MAP).
 - a) The EPA's Model Accreditation Plan (MAP) establishes the framework for the accreditation of individuals and approval of training courses. Michigan Public Act 440 of 1988, as amended, is Michigan's equivalent.
5. EPA 40 CFR Part 61 (NESHAP).
 - a) The National Emission Standard to Hazardous Air Pollutant (NESHAP) regulates the demolition and renovation of building that contain ACM. It requires:
 - (1) Prior notification to MIOSHA, EGLE, or Wayne County Air Pollution.
 - (2) Proper training of workers.
 - (3) Usage of wet methods.
 - (4) Proper disposal methods.

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1. Michigan Public Act of 135 of 1986.
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This document is provided as an information service under the authority of Public Act 154 of 1974. Its purpose is to aid in the development of training programs related to asbestos awareness. For further information regarding this document, contact:

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