

Asbestos

Summary

Asbestos is a naturally occurring group of fibrous minerals. It was added to many building materials because it is heat and chemical resistant, strong, and not easily degraded. Asbestos was widely used in building materials prior to 1980. Asbestos containing materials can also be found in building materials used after 1980, although it is rare. Asbestos is primarily found in insulation around pipes, ducts, and tanks. Other asbestos containing materials include sprayed-on fireproofing, troweled-on plaster, fire doors, wallboard, fume hood linings, linoleum, countertops, and floor tiles. Examples of where asbestos may be found include manufacturing of heat resistant clothing, automotive brake and clutch linings, certain building materials such as insulation, sound proofing, floor tiles, roofing felts, ceiling tiles, asbestos-cement pipe and sheet, fire resistant drywall, pipe and boiler insulating materials, pipeline wrap, and in sprayed on materials located on beams, in crawlspaces, and between walls.

Asbestos becomes a concern when fibers become airborne. Materials that can be crumbled or reduced to powder by hand pressure are considered to be “friable”, meaning they have the potential to become airborne. Intact, sealed, and undisturbed materials do not present an exposure risk. When materials are exposed or disturbed, asbestos fibers can become airborne, and exposure may result from fibers being inhaled. Studies have shown that some individuals exposed to asbestos fibers have developed lung cancer, asbestosis, mesothelioma, colon cancer, and cancer of the stomach. These diseases have generally been observed after long-term exposures from activities that directly disturb asbestos-containing materials (ACM). Typically, the diseases do not develop until 10 to 40 years after exposure. E&B prohibits unauthorized company employees from disturbing asbestos containing materials. The E&B HSE program requires E&B (Supervisors) to place signs and labels to identify where asbestos is present and located, coupled with the appropriate work practices to ensure that asbestos containing materials (ACM) and presumed asbestos containing materials (PACM) are not inadvertently disturbed.

E&B’s EHS program follows the Environmental Protection Agency’s (EPA) philosophy, which is detailed in a document titled “Managing Asbestos in Place”. The agency recommends a proactive in-place management program rather than requiring removal of all asbestos materials. This strategy involves identifying ACM, maintaining those materials in good condition and removing ACM as needed during maintenance or renovation activities.

Scope

All Asbestos related activities will be first coordinated with the facility owner and the E&B EHS. This Guideline has been developed to inform employees of the Asbestos Management Program. The purpose of a management program is to reduce or eliminate the risk of employee exposure to asbestos containing materials. The requirements and procedures associated with asbestos removal activities are also outlined for those individuals that have been trained to perform those activities.

Reference Regulations

National Emissions Standards for Hazardous Air Pollutants (NESHAPS): 40 CFR 61, Subpart M (National Emission Standard for Asbestos)

Glossary of Terms

Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these materials that have been chemically treated and/or altered.

Asbestos Containing Material (ACM) - Is a material that has been tested and determined to contain more than 1% asbestos, or is assumed to be in the absence of testing.

Also refer to the definition of Presumed Asbestos Containing Material (PACM). Exposure to asbestos occurs when airborne fibers are inhaled into the lungs.

Asbestosis - Scarring of lung tissue (around terminal bronchioles and alveolar ducts) resulting from the inhalation of asbestos fibers.

Authorized Person - Is any person authorized by the employer and required by work duties to be present in regulated areas.

Class I Asbestos Work - Are activities involving the removal of thermal systems insulation (TSI) and surfacing ACM and PACM.

Class II Asbestos Work - Is activity involving the removal of ACM that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding, and construction mastics.

Class III Asbestos Work - Is repair and maintenance operations, where ACM, including thermal systems insulation and surfacing ACM and PACM, is likely to be disturbed.

Class IV Asbestos Work - Is maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Disturbance - Is activity that disrupts the matrix of ACM, crumbles or pulverizes ACM, or generates visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in one standard sized glovebag or waste bag in order to access a building component. In no event shall the amount of ACM disturbed exceed that which can be contained in one glovebag or waste bag which shall not exceed 60 inches in length and width.

Enclosure - Means an airtight, impermeable, barrier around an ACM designed to prevent the release of asbestos fibers into the air.

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Fiber - Means a particulate form of asbestos 5 micrometers (μm) or longer, with a length-to-diameter ratio of at least 3 to 1.

Friable - Means asbestos-containing material that when dry, can be easily crumbled or pulverized to powder by hand pressure and is therefore likely to emit fibers.

Glovebag - Is not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-Efficiency Particulate Air (HEPA) Filter - Is a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 μm in diameter.

Intact - Means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

Mesothelioma - Is a rare form of cancer of the lining of the lung or abdomen.

Negative Exposure Assessment - Means a demonstration by the employer, that employee exposure during an operation is expected to be consistently below the Permissible Exposure Limit (PEL) and Excursion Limit (EL). It is job specific and the workplace conditions, type of material, control methods, work practices, and environmental conditions must closely resemble those of the activity to be represented.

Presumed Asbestos Containing Material (PACM) - Is thermal system insulation and surfacing material found in buildings constructed no later than 1980. All materials meeting this definition must be presumed to be asbestos containing and handled as such unless analytical testing proves otherwise.

Regulated Area - Is an area established by the employer to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits.

Surfacing Material - Is material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Thermal System Insulation (TSI) - Is ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

Responsibility

Supervisors

- Assure employees who are required to be trained receive training in accordance with this Guideline.
- Assure employees practice safe work procedures in accordance with their training, and use the proper equipment and controls.
- Assure that employees are not disturbing any materials that are suspected to contain asbestos. Contact E&B EHS if ACM is accidentally disturbed.
- Submit injury / illness forms for any work-related accident, injury, or exposures.
- Contact E&B EHS to request technical assistance.

Employees

- Report any suspect materials to supervisor prior to disturbance.
- Report accidental disturbances to your supervisor.
- Perform asbestos removal activities as trained for in a safe manner following all regulations and this Guideline while wearing appropriate personal protective equipment as necessary for the type of job performed.

EHS

- Review and revise the Asbestos Management Program Guideline as necessary.
- Coordinate and contract industrial hygiene services to survey and label ACM in buildings and monitor asbestos abatement activities.
- Maintain asbestos surveys.
- Assist the UM-Architecture, Engineering & Construction Department in the prequalification of asbestos abatement contractors.
- Provide training or coordinate the scheduling of external training as necessary.
- Provide technical assistance upon request.
- Serve as a E&B liaison for local, county, and state agencies regarding asbestos issues and inspections.
- Review and revise E&B asbestos policies as necessary.
- Maintain all records of ACM and employee exposures.
- Schedule and maintain records of all medical surveillance services, training, air monitoring, and building surveys.

Asbestos Abatement Compliance

Asbestos Surveys - An asbestos survey is conducted prior to any renovation or repair, regardless of the date of construction. Representative samples are taken of every suspect material, which are analyzed at an independent laboratory. All surveys are conducted according to the requirements set forth in the Environmental Protection Agency's Asbestos Standards for Construction. Any thermal systems insulation (TSI) material or surfacing material not tested must be presumed to be asbestos containing and handled accordingly. A scope of asbestos work will be developed for each project that outlines the materials present as well as the abatement techniques to be utilized.

Asbestos Abatement Contractors - The majority of renovation projects involving asbestos containing materials are managed by the facility owner. An asbestos abatement contractor is usually retained for abatement either by direct contract or as a subcontractor to a general contractor. All asbestos abatement contractors must be prequalified.

In-House Trained Personnel - Renovation and maintenance projects may also be conducted by in-house trained personnel. EHS can conduct abatement activities for these projects. All workers are trained and accredited as required by the Asbestos Standards for Construction.

Air Monitoring - The EHS Department hires independent consultants to conduct asbestos air monitoring during ACM removal projects conducted by asbestos abatement contractors as well as in-house personnel. The consultants typically conduct personal, area, and final clearance monitoring to ensure that fiber levels are below established standards.

The method of sampling is NIOSH Method 7400 (Asbestos and Other Fibers by PCM – Phase Contrast Microscopy). The method involves collection of a volume of air on 25 mm Mixed Cellulose Ester (MCE) filters and on-site analysis using an optical microscope. All consultants are required to complete the NIOSH 582 course for asbestos fiber counting.

Employees' personal exposures are maintained in a database at the EHS department. The exposures are categorized by type of removal to serve as a negative exposure assessment. A negative exposure assessment is job specific and the workplace conditions, type of material, control methods, work practices, and environmental conditions must closely resemble those of the activity to be represented. The assessment can be used to show that levels for a given job will be below the PEL and EL, so that lower levels of respiratory protection can be used.

Notification Procedures

Occupant Notification - Every effort must be made to pre-notify individuals who work in or adjacent to areas where asbestos activities will take place. The notification should include the presence, location, and quantity of ACM at the site and can be verbal or written. EHS accomplishes this task by sending a written notice to the building contact(s) for the area prior to abatement activities. The building contacts are then expected to convey the information to the affected persons.

This notice is also sent to the Construction Project Manager who is instructed to inform other employers of employees, i.e. other contractors, who may be working in the area. The in-house abatement members accomplish notification on their own through the use of a fill-in form that is posted outside the work areas and/or verbally to individuals in area prior to start of work. When possible notice will be given 10 business days prior to the start of Asbestos related work.

Regulated Areas

All Class I – III - work must be conducted within a regulated area. A regulated area must have the following:

1. Must be demarcated in a manner to restrict persons from entering and protect from exposure to airborne asbestos.
2. Must have signs posted with the following information:

DANGER ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS AUTHORIZED PERSONNEL ONLY

and

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA
(If required for the type of work.)

3. Must require the use of respirators, if required, prior to entry.
4. Must not allow employees to eat, drink, smoke, chew tobacco or gum, or apply cosmetics.
5. Must be supervised by a competent person.

Under no circumstances is a E&B employee that has not been trained as an asbestos worker allowed to enter a regulated area. Special provisions will be made by EHS for emergency personnel depending on the situation.

Methods of Abatement - All asbestos abatement contractors and in-house employees must follow all requirements for work practices as outlined in Part 3 of "Section 028213 – Asbestos Remediation of the University Master Specification".

Respiratory Protection - Abatement Contractors are responsible for their respiratory protection program and issuance of employee respirators. E&B employees will be issued respirators by the EHS department, as required. All employees must be medically cleared for respirator use prior to issuance. (Refer to the EHS Respiratory Protection Program Guideline for details.)

Respirators must be worn when conducting the following:

1. All Class I activities;
2. All Class II activities where ACM is not intact;
3. All Class II and III activities where wet methods are not used;
4. All Class II and III activities that do not have a negative exposure assessment;
5. All Class III work involving thermal systems insulation or surfacing materials;
6. All work where employees are exposed above the PEL/EL;
7. In emergencies.

Respiratory protection that may be issued for asbestos activities includes the following: half-face or full-face tight-fitting air-purifying respirators with HEPA cartridges and Powered Air-purifying respirators (PAPR) with a HEPA filter. All respirators will be quantitatively fit tested at EHS and all mandatory users will be required to be fit tested annually.

Protective Clothing - E&B employees will be supplied with protective clothing consisting of disposable Tyvek® suits. The suits are required to be worn during Class I operations involving greater than 25 linear feet or 10 square feet, or any operation without a negative exposure assessment, or any operation where exposures will exceed the PEL or EL. Suits should be routinely inspected for rips or tears while working. Damaged suits should be mended or immediately replaced. All contaminated suits should be disposed as asbestos waste.

Hygiene Facilities - Decontamination areas must be established for Class I work that is greater than 25 linear or 10 square feet of thermal system insulation or surfacing materials. It must be set up adjacent and connected to the regulated area. All employees must exit and enter through the decontamination area that must consist of an equipment room, shower area, and clean room in series.

Decontamination is also required for Class I work involving less than 25 linear or 10 square feet, or Class II and III work where exposures exceed the PEL or EL, or where there is no Negative Exposure Assessment. An equipment area must be established adjacent to the regulated area for the decontamination of employees and equipment. It must consist of an impermeable dropcloth on the floor surface. Work clothes must be HEPA vacuumed before removal, all equipment must also be cleaned prior to removal and employees must enter and exit through the equipment room from the regulated area.

Training Requirements

To avoid potential exposure, and in accordance with regulations, only trained and qualified individuals may disturb ACM. Contact EHS for training, if employees fall into one of these groups or are otherwise likely to disturb ACM:

Class I and II Training - Required training for activities that involve the removal of asbestos containing materials which include, but are not limited to the following: thermal systems insulation, surfacing materials, wall board, floor tile and sheeting, ceiling tile, roofing materials, and siding. Training is 32 hours for worker level and 40 hours for competent person level. If individuals are to be trained in Class II operations only, the training will consist of a minimum of 8 hours with hands-on training for the type of material that will be removed. Annual refreshers are required for both classes.

Class III Training - Required training for activities that involve the disturbance of thermal system insulation or surfacing materials for the purpose of conducting repair or maintenance activities only. Training is 16 hours with a 4-hour refresher annually.

Class IV training - is required for all maintenance and custodial staff that work in buildings that have asbestos containing materials. Initial training is 2 hours with refreshers required annually.

Housekeeping and Disposal

All asbestos waste and debris must be promptly cleaned up by properly trained workers and disposed in the proper manner. Only HEPA filtered vacuums may be used when vacuuming asbestos materials. All asbestos waste needs to be disposed in an Asbestos-accepting Type II landfill.

Abatement contractors are required to arrange for disposal at a proper landfill location and supply EHS with the final disposition records upon receipt.

Medical Surveillance

The Environment, Health & Safety Department maintains a Medical Surveillance Program. All employees who engage in Class I, II, or III work or are exposed at or above the permissible exposure limit for a combined 30 days or more per year will be included in the program for asbestos exposure. Employees otherwise required by this standard to wear a negative pressure respirator, must be physically able to perform the work and use the equipment. This determination shall be made under the supervision of a physician.

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EHS also offers the same medical surveillance examination to employees with significant past asbestos exposure. Involvement is voluntary and is aimed at those individuals who worked with asbestos containing materials routinely, prior to public knowledge of the health effects of asbestos exposure or regulations governing disturbance of ACM. Contact EHS if interested in being included for past exposure.

Medical Surveillance is required upon assignment to a job involving asbestos exposure as indicated previously and annually thereafter. Medical Surveillance will be conducted annually in accordance with the protocol for Asbestos Medical Surveillance.

Recordkeeping

All objective data and sampling data for asbestos projects are maintained at EHS offices. The data will be maintained for as long as it is relied upon. Any information regarding abatement projects will be maintained indefinitely. All records regarding employee exposures are maintained at EHS offices. These records must be maintained indefinitely.

Medical Surveillance information regarding asbestos exposures will be maintained by the Occupational Health Provider. The physician's written opinion will be maintained in an employee file at EHS offices. All information will be maintained for the duration of employment plus indefinitely.

Training records will be maintained at EHS offices for 1 year past the last date of employment.