



## The Ohio State University Asbestos Management Program

Asbestos is a generic name for a group of naturally occurring hydrated mineral silicates of the serpentine or amphibole series that are characterized by fibers or bundles of fibers of fine single crystal fibrils. It should be noted that these minerals may occur in a non-fibrous form, in which case they are not considered as asbestos. The six major recognized species of asbestos minerals are chrysotile of the serpentine group (white asbestos) and amosite (brown asbestos), crocidolite (blue asbestos), anthophyllite, tremolite, and actinolite of the amphibole group.

### Characteristics/Applications

The specific attributes and characteristics vary with the different mineral types and fibrous forms. In general, commercially valuable asbestos minerals form fibers, which are light weight, are incombustible, have high tensile strength, good thermal and electrical insulating properties, as well as moderate to good chemical resistance. Fibrous asbestos may be packed, woven, or sprayed. These characteristics and those of durability, flexibility, strength, and resistance to wear have allowed asbestos to be used in more than 3,000 commercial products. As a building material, asbestos has been used as thermal systems insulation on plumbing lines and related equipment, spray fire proofing on structural steel, surfacing decorative plaster, roofing and flooring materials, friction products, and adhesives. Chrysotile asbestos is the primary mineral form used in these building and commercial applications.

### Asbestos Sources

Naturally occurring asbestos is found in various parts of the world, including the southwest portions of the United States. Chrysotile asbestos was the first commercial mineral form to be mined. This operation began in Quebec, Canada in the 1870's and continues today. Amosite asbestos comes from South Africa, which started mining operations in 1916. Crocidolite, another amphibole of lesser economic importance, is mined in South Africa and China.

### Health Concerns

Inhalation is the primary means by which buoyant asbestos fibers may enter the body. In addition, asbestos fibers may enter the body by ingestion as a result of inadvertent consumption of liquids and foods contaminated with this material. The mineral fibers are retained in the tissues of the body throughout a person's life, even after the cessation of exposure. Fibers have been known to migrate to other organs following retention in the lungs. The three main diseases associated with asbestos exposure include:

**Asbestosis:** A non-cancerous scarring of the lung tissue that causes shortness of breath, breathing difficulty, and often heart failure. The latency period is generally 10-20 years following exposure.

**Lung Cancer:** A cancer that impacts the lung tissue, which often takes as much of twenty years to develop. Lung cancer may develop independent of the development of asbestosis. Persons who have industrial exposures to asbestos have a five (5) times greater chance of developing lung cancer than those persons who do not work with the material. It has been found that there is a synergistic affect associated with cigarette

smoke, asbestos and lung cancer. The risk of asbestos exposed workers who smoke can expect a 50 times greater chance of lung cancer than those persons who do not smoke or work with asbestos. The latency period can often take 20 or more years for the cancer to develop.

**Mesothelioma:** A rare form of cancer that attacks the lining of the chest and abdominal cavity, as well as the lining of the heart. This disease is usually always fatal. The latency period is generally 20-40 years.

## **OSU Asbestos Management Guidelines**

Asbestos has been used in many building products and materials due to its unique properties. As a building material, asbestos has been utilized as thermal systems insulation (TSI) on plumbing lines and related equipment, spray fire proofing on structural steel, surfacing decorative plaster, roofing and flooring products, adhesives, ceiling tiles, cement pipes, backing rod, electric wire insulation, drywall joint compound, gypsum board, caulk and exterior siding. Asbestos has also been found in fume hood liners, lab bench counters, chemistry filters, heat gloves and pads and in gaskets. All these applications can be found in University buildings.

In 1985 the Ohio Board of Regents sanctioned surveys of all buildings within state supported institutions of higher learning to determine the extent of thermal systems insulation, spray fireproofing, and acoustic plaster materials. As a result of the survey, it was estimated that 92% or more of the buildings on campus contained one or more of these three types of asbestos products.

As such, asbestos must be managed properly to minimize human exposure and environmental releases. The University has established the Office of Environmental Health and Safety (EHS) to manage its asbestos hazards. The management of asbestos includes: demolition, construction, and abatement projects, as well as operations and maintenance activities.

### **Demolition, Construction, and Abatement**

As required by the National Emission Standards for Hazardous Air Pollutants (NESHAP), a survey must be conducted by the University to determine if any asbestos might be present in certain quantities, which might be disturbed as a result of the aforementioned work. The survey must include a visual inspection and sample collection of suspect asbestos containing material (ACM). If there is a positive determination, abatement work will need to be arranged with a licensed contractor and possibly involve the services of a consultant to conduct more thorough sampling, project specification development, and possibly project oversight.

### **Operations and Maintenance**

Due to the widespread use of asbestos on campus, it is possible that asbestos containing materials may be encountered during normal work activities. The presence of asbestos in a building does not mean that the health of employees or occupants is at risk. As long as the asbestos containing materials remain in good condition and are not disturbed or damaged, exposure is unlikely. Asbestos exposure to building occupants and maintenance personnel can be eliminated by complying with the following guidelines:

- Assume always that suspicious looking materials contains asbestos;
- Contact your supervisor immediately if you believe that asbestos has been encountered;
- Do not disturb, damage, or otherwise handle asbestos containing materials at any time;

- Request that EHS at 292-1284 collects a sample for analysis before any work or repairs are done;
- Report any hazardous condition involving damaged asbestos materials to your supervisor;
- Participate in an asbestos awareness training class to further ensure safe working conditions.

## **OSU Asbestos Policies**

Due to the presence of asbestos in our buildings, the University has developed a number of policies designed to reduce human exposure and to ensure compliance with the various state and federal regulations. The policies include the following:

### **Hazard Assessment:**

- A hazardous materials assessment must be performed prior to any demolition, construction, or remodeling to determine the presence and the condition of any asbestos containing material. This is necessary for planning, budgeting, and design purposes. Such an assessment is necessary to comply with the federal EPA National Emission Standards for Hazardous Air Pollutants (NESHAP).
- The EHS office should be contacted to conduct the initial asbestos hazard assessment. If a project is large, complex, or beyond the capability of EHS, the use of an ODH certified asbestos consultant will be recommended to assess the hazard.
- Asbestos assessments and sampling shall be performed only by an ODH certified asbestos hazard evaluation specialist.

### **Asbestos Abatement:**

- The EHS office must be notified in advance of all planned asbestos abatements in any structure on any property owned, leased or operated by the Ohio State University.
- All asbestos abatements must have an ODH required project agreement that includes a design plan approved by the EHS office. If a project involves the removal of friable asbestos in a hazardous location, EHS will request that an ODH certified asbestos consultant (project designer) be hired to design an abatement plan.
- Asbestos abatement work shall be performed only by trained, experienced, and ODH certified individuals and only by companies listed on the EHS Accepted Abatement Contractor list.
- Asbestos containing materials will be disposed of at EPA licensed landfills per EPA regulations.
- The cost of asbestos abatement (e.g., hazard assessment, sample collection and analysis, abatement specifications development, abatement oversight, and actual abatement) shall be considered part of the project budget.

### **Abatement Oversight:**

- The EHS office will monitor all asbestos abatements. If a project is large, complex, or beyond the capability of EHS to monitor, the use of an ODH certified asbestos consultant (project designer) must be used to monitor (provide oversight) of the abatement and to verify to the University that its asbestos was removed safely and disposed of per regulations.
- Asbestos abatement plan design and oversight shall be performed only by an ODH certified asbestos hazard abatement project designer listed on the EHS Accepted Asbestos Consultant list.

### **Misc:**

- The EHS office must receive copies of all **close out documents** for all asbestos abatements on any property owned, leased or operated by the Ohio State University.

- The use of asbestos containing products or materials is prohibited for use in University buildings unless there is no suitable substitute. Such use will require the knowledge and approval of the EHS office. This requirement is currently in the University Building Design Standards.
- Unless in good condition and not posing a hazard, asbestos is to be abated or removed whenever possible as part of the project.
- University personnel or contractors who encounter suspect asbestos containing material must not disturb the material until EHS has been able to sample and verify the contents before being authorized to continue.
- The hierarchy or preferred method of asbestos management in descending order of compliance is: removal, encasement, encapsulation, and management in place.
- Persons who suspect an asbestos exposure must complete a Supervisor's Accident and Injury Report, which must be sent to Employee Health for processing and inclusion in the individual's medical records.
- University employees and contractors will be provided with information regarding the location and condition of asbestos containing materials.

## Federal and Ohio Asbestos Regulations

The Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and Ohio Department of Health (ODH) are the primary agencies responsible for the regulation of asbestos. In general, the EPA is responsible for developing and enforcing regulations necessary to protect the general public from exposure to airborne contaminants that are known to be hazardous to human health. OSHA has the responsibility for the health and safety of workers who may be exposed to asbestos in the work place. The Ohio Department of Health is similarly involved in protecting the health of the public and is responsible for training and certifying those who perform asbestos abatement activities.

As the owner of buildings occupied by the public and employees, The Ohio State University has the responsibility to comply with all applicable federal, state, and local regulations. The University's EHS office frequently conducts building surveys prior to renovation and construction, collects and analyzes asbestos samples, provides asbestos awareness training, acts as the regulatory agency liaison, and maintains asbestos management records. In addition, EHS performs frequent site inspections to insure compliance in all asbestos related activities on campus.

The specific regulatory requirements involving EPA, OSHA, and ODH include the following:

### Ohio Dept. of Health

**Standard:** Ohio Administrative Code (OAC 3701-34)

**ODH Notification:** A notification must be submitted at least 10 working days prior to asbestos abatement work involving:

- 50 linear feet
- 50 square feet
- 50 cubic feet

**Training:** All persons involved with any aspect of asbestos related work must receive training and certification for each level of abatement activity.

**ODH Certification Categories:**

Abatement Worker  
Air Quality Technician  
Contractor Supervisor  
Asbestos Inspector  
Project Manager  
Project Designer

**OSHA**

**OSHA Standards:**

Construction Standard (29 CFR 1926.1101)  
General Industry Standard (29 CFR 1910.1001)

**Exposure Standards:**

Permissible Exposure Limit (PEL) - 0.1 fibers per cubic centimeter of air (f/cc) eight hour time weighted average (TWA).  
Excursion Limit- 1.0 f/cc for 30 minutes

**Medical Monitoring:** Medical monitoring required when the PEL is exceeded.

**OSHA Classifications and Related Training Requirements**

**Class I-** Asbestos work activities involving the removal of thermal system insulation (TSI) and surfacing asbestos containing material (ACM), such as: fireproofing, acoustic plaster, etc.

**Training:** Abatement Worker (32 hours)  
Competent Person\* (40 hours)

**Class II-** Asbestos work activities involving the removal of ACM, which is not TSI or surfacing material. This would include: wallboard, floor tile, transite sheeting, roofing materials, siding, shingles, and mastics.

**Training:** Abatement Worker Specific Training  
Floor Tile (8 hours)  
Roofing Material (8 hours)  
Transite Sheeting (8 hours)  
Mastic (8 hours)  
Competent Person (12 hours for flooring, all other Class II work requires 40 hours)

**Class III-** Asbestos work means repair and maintenance operations (O and M) where TSI and surfacing material are likely to be present. This work involves one glove bag or one disposal bag of work.

**Training:** Operations and Maintenance Worker (16 hours)  
Competent Person (24 hours)

**Class IV-** Asbestos work means maintenance and custodial activities during which employees may contact ACM and activities involving the clean-up of ACM waste and debris.

**Training:** Awareness Training (2 hours)  
Competent Person (40 hours)

**\*Competent Person:** A person who is capable of identifying existing asbestos hazards and selecting appropriate control measures to eliminate them.

**Respiratory Protection-** The need for a respirator will depend upon whether the PEL is exceeded, as well as the level of asbestos exposure.

**Work Practices:** Specific work practices are required depending upon the class of work performed by the individual.

## **EPA**

**Standards:** NESHAP- National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

**Surveys:** A comprehensive survey must be performed to determine the presence of asbestos prior to renovation, construction, or demolition.

**Notification:** A notification must be submitted 10 working days prior to removal of friable asbestos in excess of the following:

260 linear feet  
160 square feet  
35 cubic feet

**Asbestos Definition:** A material having more than one (1) percent asbestos by weight.

**Asbestos Categories:**

Category I- Non-friable (pliable) material such as asphalt shingles, floor tile, mastic.  
Category II- Non-friable (stiff) material such as transite and cement board.  
Friable- Asbestos material that can be easily crumbled with the hands.

**Work Practices:**

Material must be adequately wet during removal, disposal, and transport.  
No visible emissions are permitted within abatement work area.

**EPA Model Accreditation Program (AHERA)**

Management Planner (Abatement Recommendations)	(16 hours)
Project Designer (Specifications and Plan Design)	(24 hours)
Asbestos Inspector (Assessment and Sample collection)	(24 hours)
Abatement Contractor (Supervise abatement workers)	(32 hours)
Abatement Worker	(24 hours)