

Overview

Asbestos can be found in thousands of different materials in older buildings. It is considered one of the most regulated substances and was one of the first hazardous air pollutants regulated under the U.S. **Federal Clean Air Act**.

Restoration and renovation contractors may not be aware that there are asbestos-containing materials in buildings where they are working. During the course of emergency water or fire damage renovations, asbestos materials may be present and may have been accidentally disturbed, removed and disposed of without the knowledge of the building owner or the company performing the work. Removing these materials may create a **potential health hazard** and **pose a potential liability risk**.

TABLE OF CONTENTS

Overview	1
What is Asbestos?.....	2
Health Issues.....	4
Regulations.....	5
Classes of Asbestos Work.....	7
Communication of Hazards.....	7
Training.....	8
Asbestos Assessment - Training.....	8
Control Measures.....	9
Summary.....	10
Resources.....	10
Licensing Policy.....	10
About this Document.....	11
Acknowledgments.....	11



In Our Industry Something Like This Can Happen:

A restoration contractor responds to a school flood and finds water in several classrooms. There is wet glued-down carpet on the floors. The restoration contractor removes the wet carpet and there are 9-inch floor tiles under the carpet. They continue to perform the remediation removing all the carpet and floor tiles. After the fact, someone performs a test on the remaining pieces of floor tile and it is determined that they contain 5% asbestos. The restoration contractor just performed an illegal removal of asbestos-containing material in a school and may have put their workers at risk of exposure and may have contaminated the school. They could be fined by the EPA, OSHA, and the state for illegal removal, transportation, and disposal of asbestos.

Improper removal can have many legal implications. The U.S. Environmental Protection Agency (EPA) regulates removal activities, the Occupational Safety and Health Administration (OSHA) regulates worker exposure and safe work practices, the U.S. Department of Transportation (DOT) regulates the transport and disposal of asbestos, while state and local jurisdictions have their own regulations for asbestos activities. That means that **removing, transporting and disposing** of asbestos-containing materials can violate multiple laws and regulations and lead to substantial fines and prison time.

This document has been prepared to educate restoration contractors about asbestos issues, but it is not legal advice. Each situation is different and you should obtain advice from an attorney licensed in your state. The goal of this guidance document is to educate the restoration contractor and the industry at large. Restoration contractors should follow up and take action, get more information, train employees and protect their companies from possible liability.

This document is not all encompassing, but it is a compilation of current regulations and guidelines. Additional resources are listed at the end so readers can research actual regulations and requirements. Regulations and standards may vary depending on the city, state, or country.

What is Asbestos?

Asbestos is a **fibrous** mineral that is naturally occurring in the earth. There are several fibrous mineral types. One of the most common is called **Chrysotile** (or white asbestos). Others include: **Amosite** (brown asbestos), **Crocidolite** (blue asbestos) and **Anthophyllite, Tremolite, and Actinolite**. These minerals were mined and added to building materials and textiles.

Asbestos is called the “**miracle fiber**” because it is virtually indestructible to heat and chemicals. In the past, asbestos has been added to more than **3,000 building materials** in order to strengthen them, provide heat or thermal insulation, acoustical resistance, and fire or chemical resistance.

Most products made today do not contain asbestos.

- It was added to materials from the early 1900s until approximately 1980.
- As a general rule, thermal insulation and surfacing materials found in buildings constructed before 1981 and floor tiles installed in buildings through 1981, are presumed to be asbestos-containing materials (PACM) unless tested otherwise.
- A contractor should not assume that materials used in buildings constructed after 1980 are asbestos free.
- There are a few materials used after 1980 that may still contain asbestos, e.g., mastics, tars and caulks.



Asbestos mineral fibers in raw form



9 x 9 vinyl asbestos tiles - VAT



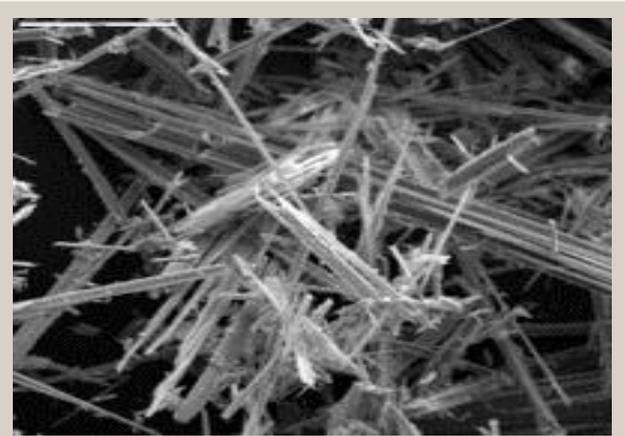
Asbestos in textured ceiling



Damaged asbestos cement siding



Textured plaster ceiling with asbestos



Asbestos fibers under a microscope

The following is a list of some common materials in buildings that may contain asbestos:

- Pipe insulation
- Boiler insulation
- Gaskets - boiler or ventilation system
- Floor tiles
- Linoleum flooring
- Mastics and glues
- Asbestos roofing materials
- Roofing tars and asphalt roofing materials
- Cement roofing and siding (cement panels or corrugated panels)
- Caulking
- Wall or ceiling plaster
- Gypsum board and spackle
- Textured ceilings (popcorn ceilings)
- Fire doors
- Blown-in insulation – vermiculite insulation
- Sprayed-on fire-proofing coatings
- Fire blankets and clothes
- Cement pipes or boards (transite)
- Woven cloth wire insulation
- Ceiling tiles
- Laboratory countertops and sinks



Asbestos roofing materials



Glued on ceiling tiles with asbestos in the glue pods



Tile and mastic both with asbestos



Asbestos pipe insulation



Sink undercoating containing asbestos



Overhead pipes with asbestos insulation

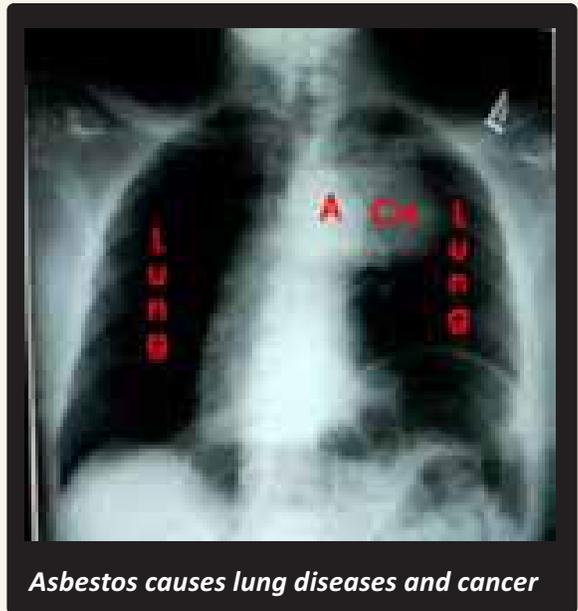
Health Issues That Could Affect YOU

Asbestos is unique because:

- Bundles of fibers can be broken down into very fine particles. These particles can cleave down to 1-5 microns [micron = 0.001 mm] and can become airborne very easily.
- The primary route of exposure is through the respiratory tract, impacting the lungs.

Asbestos fibers can cause serious health problems:

- If inhaled, asbestos fibers can cause diseases which disrupt the normal functioning of the lungs.
- Three specific diseases – **asbestosis** (a fibrous scarring of the lungs), **lung cancer**, and **mesothelioma** (cancer of the lining of the chest or abdominal cavity) have been linked to asbestos exposure.
- These diseases do not develop immediately after inhalation of asbestos fibers; it may be 10 to 20 years before symptoms appear.



Asbestos causes lung diseases and cancer

The more asbestos fibers a person inhales; the greater the risk of developing an asbestos-related disease. Most cases of severe health problems resulting from asbestos exposure have been associated with workers in industrial jobs, e.g., mining, ship building, installation and fabrication of asbestos materials, where they were exposed to very high levels of asbestos in the air without any respiratory protection.

Many of these workers were also smokers. Workers exposed to asbestos and cigarette smoke have a higher incidence rate of illness. These employees worked directly with asbestos materials on a regular basis and generally for long periods of time, and were exposed to high concentrations of airborne asbestos.

There is an increased concern for the health and safety of construction, renovation, and building maintenance personnel because of possible periodic exposure to elevated levels of asbestos fibers while performing their jobs.

There is some controversy about low-level asbestos exposure from buildings or from the environment and the risk of cancer. Although generally the risk is negligible for occupants, health concerns remain, particularly for construction or custodial workers. Their jobs are likely to bring them into close proximity to asbestos-containing materials.

The federal, state and local governments have promulgated regulations to protect workers and occupants from exposure to asbestos in buildings. They have developed acceptable exposure limits and created standards for managing and maintaining asbestos.

Regulations

There are **many** regulations for asbestos handling, removal, transportation and disposal. Asbestos is one of the most regulated substances in existence. There are **federal, state** and **local** regulations that apply depending on the location where one is working. Check with **state** and **city** departments of health and environmental protection offices to ensure the company follows appropriate requirements. **Two** of the most important federal regulations as they apply to the restoration or construction industry are summarized here.

EPA – National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Asbestos NESHAP (40 CFR 61, Subpart M) addresses milling, manufacturing and fabrication operations, demolition and renovation activities, waste disposal issues, and waste disposal sites. The main concern in the restoration industry involves demolition and renovation activities.

This rule made a distinction between building materials that would readily release asbestos fibers when damaged or disturbed and those materials that were unlikely to result in significant fiber release. The terms “**friable**” and “**non-friable**” were used to make this distinction. These are two important terms.

Friable asbestos-containing material (ACM) is defined by the Asbestos NESHAP as any material containing more than one percent asbestos that when dry, can be crumbled, pulverized or reduced to powder by hand pressure.

Non-Friable ACM is any material containing more than one percent asbestos that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated Asbestos-Containing Materials (RACM) are friable or non-friable materials that have the potential to become friable by sanding, cutting, or grinding in the course of demolition or renovation operations.

Under the NESHAP rule, the following work practices should be followed whenever demolition/renovation activities involving RACM occur:

- Notify EPA of intention to demolish/renovate.
- Have all RACM properly removed before being demolished or renovated or before any disruption activity begins.
- Keep RACM adequately wet before, during, and after removal operation.
- Conduct demolition/renovation activities in a manner which produces no visible emissions to the outside air.
- Handle and dispose of all RACM in an approved manner.

EPA – AHERA Rule

The **Asbestos Hazard Emergency Response Act (AHERA) [1987]** is also known as the Asbestos-Containing Materials in Schools rule or AHERA Rule. Under this rule, local education agencies (LEAs) are responsible for ensuring compliance with AHERA and are required to have and maintain an up-to-date **Asbestos Management Plan (AMP)**, conduct training for their staff, perform inspections of their buildings, identify the location and condition of asbestos-containing materials, and have documentation of such. The LEA will have a designated person responsible for managing the asbestos issues. The LEA and the designated person work together to ensure that each school is in compliance with federal, state, and local asbestos regulations and that there are no uncontrolled releases of asbestos fibers in the school which could pose a health threat to children and school workers.

When a restoration contractor is responding to a school it is important to identify the contact person who is the AHERA - designated person. This person should know if there are any asbestos-containing materials in the building and the location of these materials. Before any demolition work is performed, confirm there are no asbestos-containing materials present and take appropriate action if they are.

The school should also have testing documentation of the building materials indicating that the materials do or do not contain asbestos. It is important to look at the date of sampling and analysis and be sure that the proper analysis was performed at the time. Some analytical methodologies have changed since 1987.

Although this rule has been in place for many years, some schools may not have this information readily available and additional inspection and testing may need to be performed before work starts.

Occupational Safety and Health Administration (OSHA)

OSHA has two regulatory standards for asbestos:

- 1) **Asbestos Standard for General Industry (29 CFR 1910.1001); and**
- 2) **the Asbestos Standard for the Construction Industry (29 CFR 1926.1101).**

Here is a summary of the Construction Industry standard as it applies to the restoration industry.

The OSHA asbestos standard for the construction industry regulates asbestos exposure for the following activities:

- Demolishing or salvaging structures where asbestos is present
- Removal or encapsulation of asbestos-containing materials
- Constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates
- Cleaning up asbestos spills/emergencies
- Transporting, disposing, storing, containing, and housekeeping involving asbestos or asbestos-containing products on a construction site

The OSHA standard establishes a classification system for asbestos construction work. Four classes of construction activity are matched with stringent control requirements.

Classes of Asbestos Work

Class I Asbestos Work: The most potentially hazardous class of asbestos jobs – involving the removal of thermal system insulation and sprayed-on or troweled-on surfacing asbestos-containing materials. Thermal system insulation includes materials applied to boilers, pipes, tanks, ducts, or other components to prevent heat transfer. Surfacing materials include decorative plaster on ceilings, acoustical materials on decking, and fireproofing materials on structural members.

Class II Asbestos Work: Includes the removal of other types of asbestos materials that are not thermal system insulation, such as resilient flooring and roofing materials (floor tiles, ceiling tiles, siding, roofing, and transite cement panels).

Class III Asbestos Work: Includes repair and maintenance operations where asbestos-containing materials are disturbed.

Class IV Asbestos Work: Includes custodial activities where employees clean up asbestos-containing waste and debris, e.g., dusting contaminated surfaces, vacuuming contaminated carpets, mopping floors, and general cleanup around asbestos-containing materials.

Overall, **Class I and II** work involves activities associated with the removal of asbestos-containing materials, more or less the role of an abatement contractor, and **Class III and IV** are custodial and maintenance activities. In the restoration industry, **Class IV** work is likely to occur in old buildings and restoration contractors must comply with the requirements.

- OSHA established several provisions that employers must follow to comply with the asbestos standard. The agency set strict exposure limits and requirements for the exposure assessment, medical surveillance, recordkeeping, competent persons, regulated areas, and hazard communication.
- Employers must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fibers/cc as an 8-hour time-weighted average (TWA) and a short-term exposure limit (STEL) of 1 fiber/cc as averaged over 30 minutes.
- Employers must provide a medical surveillance program for employees if they are exposed to asbestos for more than 30 days per year performing Class I, II, or III work, or if employees wear negative-pressure respirators.

Communication of Hazards

The communication of asbestos hazards is vital to prevent exposure to site workers or other personnel. One should ask the building owner how old the building is and whether there are any known asbestos materials in the building. Schools are required by the EPA to have an asbestos management plan that identifies the location, quantity and condition of the asbestos materials, so ask to review the asbestos management plan if it is an older building.

Before beginning work, building owners must identify all thermal system insulation, sprayed or troweled-on surfacing materials, and resilient flooring materials installed at the work site before 1981.

In public or commercial buildings, asbestos-containing materials may already be labeled with signs. Here is an example of a hazard communication sign that may be on pipes, boilers or other materials.

All employers discovering asbestos-containing materials on a work site:

- Must notify the building owner and other employers on site within 24 hours of its presence, location, and quantity.
- Should stop work and address the asbestos hazard in the appropriate manner. If the asbestos materials are not to be disturbed, then make sure that all people involved are aware of the presence and location of asbestos.
- Precautions should be taken to prevent the disturbance or removal of such materials.



Training

This training should include:

- Ways to recognize asbestos materials or presumed asbestos-containing materials
- Ways to recognize damage and deterioration
- Health issues associated with asbestos, and how to control and avoid hazards.

On all construction sites with asbestos operations, employers must name a competent person qualified and authorized to ensure worker safety and health. A competent person shall be trained and experienced in identifying suspect materials, how to deal with asbestos issues, and have knowledge of the appropriate regulations.

A restoration contractor should have a person trained to be a “competent person.” This training should be equivalent to the **16-hour EPA Operations and Maintenance (O&M) course**.

It is strongly recommended that all field staff, estimators, supervisors, and technicians attend an asbestos awareness class that is at least **two** hours long. It is **required** by OSHA that workers performing Class IV operations be trained in curriculum and methods equivalent to the EPA Awareness Training Class.

Asbestos Assessment - Training

An asbestos-containing material is defined as a material containing more than one percent asbestos. One can presume a suspect material contains asbestos and treat it as such until tested. If materials are suspected to contain asbestos, they should be tested before being removed or disturbed.

Analysis of a sample will be performed with a microscope, looking for and identifying the presence of asbestos. The most common asbestos forms are chrysotile, amosite, and crocidolite. Here is a photo taken from a microscope.

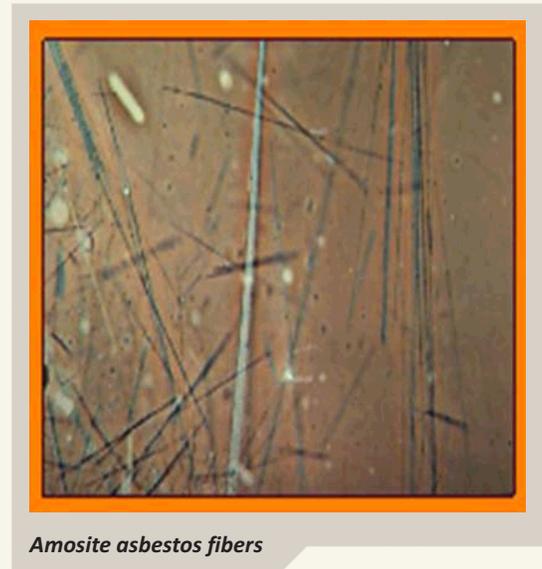
Laboratory analysis can be performed by an accredited lab. Some companies will collect samples themselves and then send them to a lab, while other companies will hire a Certified Industrial Hygienist (CIH) or an asbestos investigator to collect the samples.

Samples are to be placed in a sealable container, such as a zip bag, and the bag should be labeled. The sample container should have **the site name, sample location** and **sample number** on it. A chain of custody form, usually provided by the laboratory, should be filled out. The following information should be on the chain of custody:

- **Name of company and person collecting the sample.**
- **Date of sample collection.**
- **Address of sample.**
- **Specific location of sample - e.g., room, area in room where found (pipe along back ceiling in classroom 26).**
- **Description of material (plaster, floor tile).**
- **Sample number that corresponds to the labeled container.**

Contact a laboratory and request copies of the chain of custody form. Ask how they want the samples contained and delivered. Be familiar with the pricing and the types of analysis that are available for asbestos. Asbestos samples can be analyzed within 24, 48, or 72 hours. Costs will vary depending on the type of analysis and the turnaround time.

Asbestos materials are typically analyzed by **Polarized Light Microscopy (PLM)**. Friable samples, such as pipe insulation, ceiling tiles and crumbled plaster, are analyzed by PLM using the EPA method. Floor tiles, tars and mastics may require different methods using **PLM or Transmission Electron Microscopy (TEM)**. Some states require a special PLM method for non-friable organically bound materials. Ask the laboratory which method is best for each type of material.



Amosite asbestos fibers

Control Measures

Asbestos can be encountered in many old buildings and if present, how should it be handled? First, do not disturb the material if it has not been disturbed previously. If materials are already disturbed or damaged, avoid additional handling of the materials.

When there are asbestos-containing materials present, they need to **be handled, removed and disposed of properly**. Contact an asbestos professional or licensed asbestos abatement contractor in the area.

Do's

- Perform an assessment of the work area and look for suspect asbestos containing materials.
- Only workers trained/qualified should cleanup asbestos materials. Workers should also be protected with HEPA respirators, disposable suits and gloves.
- Collect samples of materials to be sent to laboratory. Three (3) samples of each material is recommended.
- If asbestos is present, decide on what actions are to be taken and Inform others that the material is present.
- Contain the area. Use plastic barriers and in some cases set up negative air containment using HEPA filtration devices.
- Keep materials wet if they have been disturbed.
- Use only HEPA vacuums or wet methods to clean it up.
- Contain the asbestos debris in a leak-tight container, such as 6-mil bag, sealed and labeled.
- Have the area professionally cleaned and document response action taken.
- Have third-party testing and inspection performed to confirm that the area was properly cleaned.

Don'ts



- Do not use fans on materials if they are likely to release asbestos fibers.
- Do not dispose of materials as regular waste. Check with local agencies on disposal requirements.
- Do not handle asbestos-containing materials unless you are qualified to do so.

The asbestos contractor's duties include:

- Assess the quantities and location of the materials to provide a cost for abatement
- File notifications before removal
- File applications for permits and notifications with the local, state, and federal authorities
- Awareness that there is typically a 10-day notification time prior to the removal in a planned renovation or demolition

In some cases where there is an emergency cleanup, the asbestos contractor can file an emergency notification and proceed with the abatement immediately.

At the end of the asbestos abatement process, the area should be inspected and tested to document completion. The final air test results are typically reported in **fibers/cc**. In most regulations, the clearance level is **<0.01 fibers/cc**. When the results are acceptable, the containment and equipment can be removed. The client and/or property owner should request from the asbestos contractor copies of all **notifications, permits, licenses, waste disposal manifests, and final air tests**.

Resources

The following are some resources which have been used in the creation of this document. They can be reviewed for further information on asbestos requirements and compliance. This guidance document has been based on the regulations and guidance documents from the EPA and OSHA. Regulations and standards may vary from state to state in the U.S. and may be different in other countries.

USEPA – U.S. Environmental Protection Agency (800) 368-5888
www.epa.gov/asbestos

OSHA – Occupational Safety and Health Administration
www.osha.gov/SLTC/asbestos

ATSDR -Agency for Toxic Substances & Disease Registry
www.atsdr.cdc.gov

AIHA – American Industrial Hygiene Association
www.aiha.org

CPSC - Consumer Product Safety Commission
www.cpsc.gov

Summary

There can be asbestos in many materials that are found in older buildings (typically built prior to 1981) and a restoration contractor should be aware of this. Restoration contractors can be exposed to danger and hidden liability anytime they respond to a claim.

Precautions can be taken by first ascertaining how old the buildings are before starting work, inspecting and testing for asbestos, training workers about potential asbestos issues and having a procedure to deal with asbestos if it is present. Restoration contractors should have a list of asbestos contractors and testing companies in their area.

Asbestos abatement may be part of a restoration project and some insurance companies will allow for the costs to be included as a part of the claim. Be sure to discuss these issues with the claim adjuster and building owner.

There are many regulatory requirements for asbestos. They could impact sampling asbestos, analysis of asbestos, removal and cleanup, transport and disposal, hazard communication, personal protection, worker exposure, and employee training. It is up to the employer or contractor to be aware of these issues and to take appropriate action to minimize health risks and potential liability.

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