

## ASBESTOS BACKGROUND INFORMATION

### Asbestos Facts

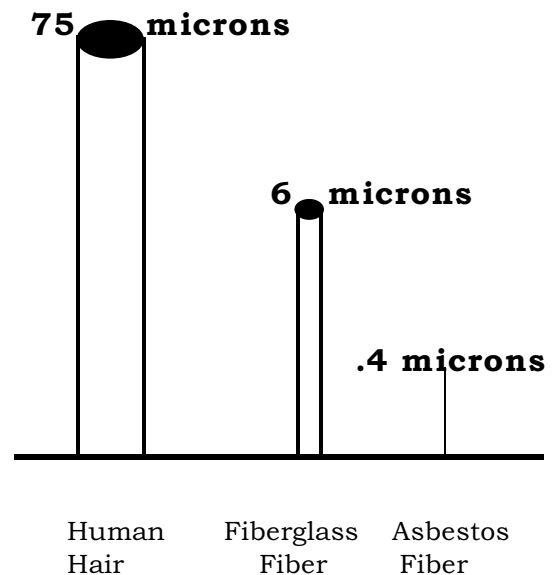
#### What is Asbestos?

Asbestos is a mineral. **It is a natural rock mined from the ground.** Most of the asbestos used in this country comes from Quebec in Canada. Some of the asbestos used here comes from South Africa. Asbestos is also found in America in the waste materials in many mining operations, and in vermiculite.

If you looked at an asbestos-containing rock it would look "hairy" as if it had cotton sticking out of it. When the rock is crushed, the asbestos fibers are released.

The smallest of these fibers are like thin, sharp, invisible needles.

You cannot feel or taste these asbestos fibers. The fibers that can get into your body are too small to see.



#### Uses of Asbestos

There are over 3,000 products that contain asbestos. Hardly any products are made of pure asbestos. It is usually mixed with other materials. **Anything that contains more than 1% of asbestos is considered to be an asbestos containing material or ACM.** All ACM is treated like asbestos.

Asbestos is strong, yet it is very flexible. It is a great insulator against heat, cold, and noise. Building materials that are most likely to have asbestos in them are –

- △ fire insulation
- △ heat insulation
- △ floor tiles
- △ ceiling tiles

A lot of asbestos is in old buildings. New buildings built in the 1980's don't have as much asbestos in them.

You are likely to find asbestos in:

- △ Sprayed on ceiling insulation
- △ Pipe and boiler insulation
- △ Duct insulation
- △ Floor and ceiling tile



Sprayed-on asbestos insulation is usually fluffy material sprayed onto ceilings or beams. It was used as soundproofing, fireproofing, or for decorative purposes. Sometimes you can see the insulation. Sometimes it is covered by ceiling tiles or walls. Sprayed on asbestos insulation was banned in 1973.

Asbestos pipe and boiler insulation may be covered with paper, cloth or metal. The insulation may be cardboard-like pipe wrap or cement on pipe elbows. It may also be troweled-on insulation on boilers or boiler wrap.



Some Asbestos-Containing Materials (ACM)		
acoustical (sound) plaster	fire blankets	fireproofing on beams
acoustical (sound) tiles	transite (cement) pipes	flue pipes
boiler insulation	fire curtains	mastic
brake shoes	valves	pipe gaskets
ceiling insulation	fire doors	pipe insulation
chemical tanks	electrical insulation	roofing felts
decorative plaster	spackling	vinyl-asbestos floor tiles
dropped ceiling tiles	siding	
duct insulation	roofing asphalt	transite (cement) sheets

Asbestos duct insulation is usually a thin layer of insulation. It is usually painted to match the room. It may be covered with paper, cloth or metal.



Asbestos floor and ceiling tile look exactly like non-asbestos tile. Asbestos floor tile is usually vinyl asbestos tile (**VAT**). Asbestos floor tile is most often 9 inches square. Asbestos ceiling tile is used for sound insulation or for decorative ceiling tile.

Asbestos is dangerous when it becomes **friable**.

Asbestos is dangerous when it breaks into small fibers and becomes airborne.

Asbestos fibers are very light. Because they are so light and because of their shape they can float in the air for long periods of time. **It can take 48 – 72 hours** for asbestos fibers to fall in a still room. In a room with air currents, these fibers may stay in the air much longer. When the fibers are in the air, they can be breathed in.

"**Friable**" asbestos is an asbestos product that can be crumbled in your hand. It is more dangerous than a non-friable piece of asbestos. The fibers are more likely to get in the air.



An example of friable asbestos is sprayed-on ceiling insulation. The insulation may fall off the ceiling and get in the air without even being touched. When someone touches the ceiling or when air blows across it, asbestos may get in the air.

An example of non-friable asbestos is intact vinyl-asbestos floor tile (VAT). If you leave it alone, the asbestos fibers will probably stay in the tiles. But if you **saw, drill, or sand** the tile, asbestos may get into the air.

## Types of Asbestos

There are six different minerals that are all considered to be asbestos. They all cause disease. They are all treated in the same way.

The three most common types of asbestos are:

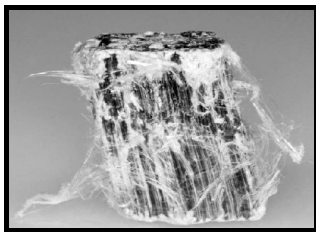
### Chrysotile

This is the most common type of asbestos. it makes up **95%** of the asbestos found in buildings. Water is very effective at keeping these fibers out of the air. Chrysotile absorbs 8 times its weight in water. Chrysotile is mined in Quebec, Canada and in Vermont.

This is also called **white asbestos**. Chrysotile is commonly used in spray-on insulation and pipe wraps.

### Amosite

This makes up less than **5%** of the asbestos in buildings. It does not absorb water, so it is much harder to control the fibers. Amosite is often found on boilers and mechanical equipment. Amosite is mined in South Africa. This is also called **brown asbestos**. Amosite is used in high moisture areas such as pipes and siding,



### Crocidolite

This is very similar to amosite, but is even less common. It is called **blue asbestos**.

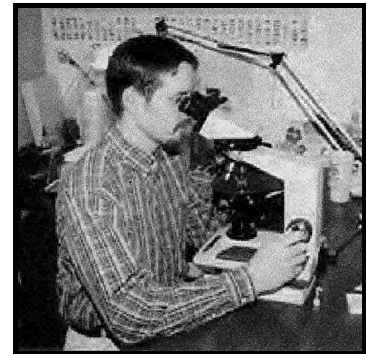
## Analyzing Asbestos

You cannot tell if a product contains asbestos just by looking at it. Many products look the same. The only way to be sure is to send a sample to a lab. There are 3 main methods for identifying or measuring asbestos. They are –

**Polarized Light Microscopy (PLM)** for bulk samples. This method tells whether a bulk sample of a material contains asbestos. Samples are taken through their entire thickness of the material. PLM will tell what type of fiber is present. It will tell what type or types of asbestos are there, if there are other fibers like fiberglass or cellulose and the percentage of each. This method is used for identifying whether and where asbestos in the building and where it is found. Cost for sample analysis is about \$25.00.

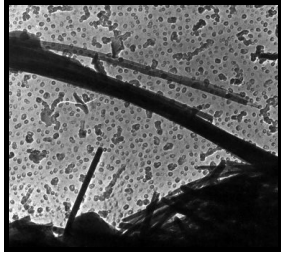
**Phase Contrast Microscopy (PCM)** for exposure monitoring. This is used for measuring worker exposures to asbestos fibers in the air. It counts all fibers, not just asbestos, and it cannot "see" very small asbestos fibers. OSHA requires air monitoring daily on asbestos jobs for worker exposure.

These samples are collected by attaching a small pump to your waist. A long tube goes



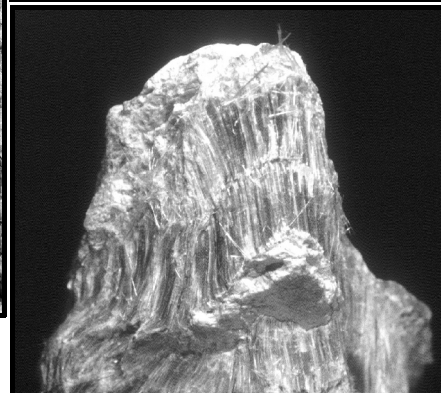
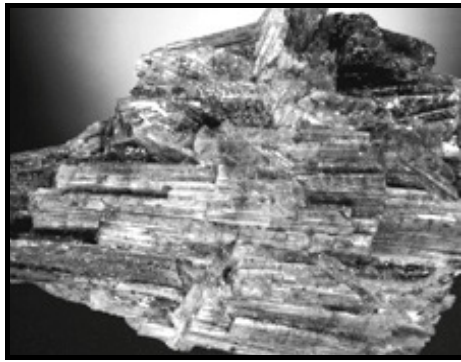
behind your back and connects to an open plastic cassette that is placed face down near your collar (breathing zone). Sample analysis is about \$15.00. See Unit 6.

**Transmission Electron Microscopy (TEM)** for clearance. This method



uses a very special, very complicated electron microscope that can “see” the very tiny asbestos fibers (see picture at left). It can also tell what type of asbestos fibers are there. This method is good for measuring background and clearance asbestos samples. It is also used when other fibers, such as gypsum or fiberglass, may give a false reading on PCM.

The EPA requires **TEM clearance sampling in schools and public buildings to make sure that areas can be safely re-occupied after an asbestos abatement job is finished.** TEM costs from \$150-350 per sample.



## Key Facts

**Asbestos is a naturally occurring material that is found in some rock formations.**

**Asbestos is dangerous when it becomes airborne and can either be swallowed or inhaled.**

**Older buildings usually have more asbestos in them than newer buildings.**

**Asbestos was used in a variety of residential and commercial building products including: floor tile; ceiling tile; sound and thermal insulation; siding; roofing; spackling; plaster and stucco; and paints.**

**Asbestos was used in many industrial settings for the above named products as well as for piping, gaskets, fireproofing, electrical insulation, and brake shoes.**

**Asbestos that is easily crumbled by hand pressure is called “friable” asbestos.**

**You cannot tell if a product contains asbestos by looking at it. The sample must be sent to a lab for analysis.**

**The three most commonly used types of asbestos were:**

**Chrysotile - White, fluffy asbestos. 95% of all asbestos used in this country was chrysotile asbestos.**

**Amosite - Brown asbestos. Amosite was used for siding and piping. It does not absorb water easily.**

**Crocidolite - Crocidolite is a blue/green asbestos. It also does not absorb water readily.**