



THE UNIVERSITY OF  
ALABAMA IN HUNTSVILLE

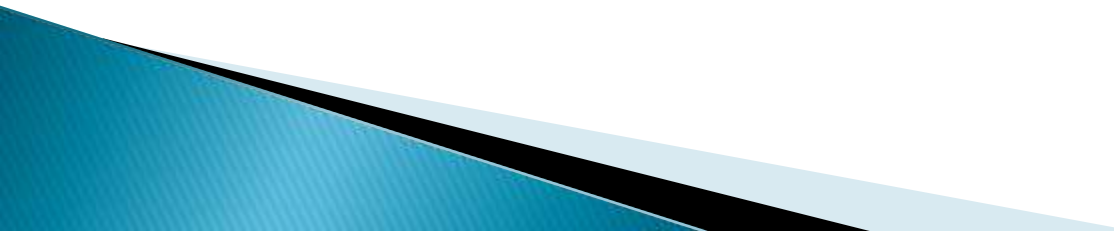
# ASBESTOS AWARENESS

For workers and building occupants

# Asbestos Awareness

Asbestos is a serious health hazard commonly found in our environment today. This training provides an overview of asbestos and its associated hazards.

It is important for employees who may work in buildings that contain asbestos to know where it is likely to be found and how to avoid exposure.



# Asbestos Awareness

This training was prepared with information provided by:

ADEM

ATSDR

EPA

OSHA

OSU-EHS

What is Asbestos?

# What is Asbestos?

Asbestos is the name applied to six naturally occurring minerals that are mined from the earth. The different types of asbestos are:

- ▶Amosite
  - ▶Chrysotile
  - ▶Crocidolite
  - ▶Actinolite
  - ▶Anthophyllite
  - ▶Tremolite
- 

# What is Asbestos?

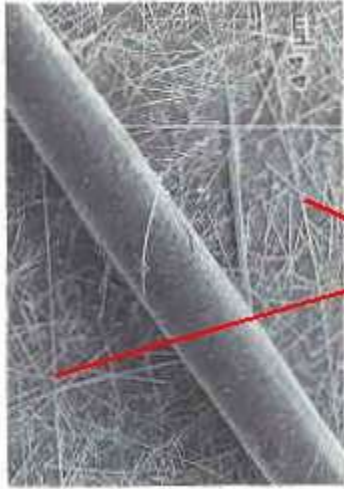
Of these six, three are used more commonly.

**Chrysotile** (white) is the most common, but it is not unusual to encounter

**Amosite** (brown / off-white), or

**Crocidolite** (blue) as well.

# What is Asbestos?



*Amosite asbestos fibers seen under electron microscope appear as tiny, fine, straight images.*

Human Hair

All types of asbestos tend to break into very tiny fibers.

These individual fibers are so small they must be identified using a microscope.

Some fibers may be up to 700 times smaller than a human hair.

# What is Asbestos?



Because asbestos fibers are so small, once released into the air, they may stay suspended there for hours or even days.



# What is Asbestos?

Asbestos fibers are also virtually indestructible.

They are resistant to chemicals and heat, and they are very stable in the environment.

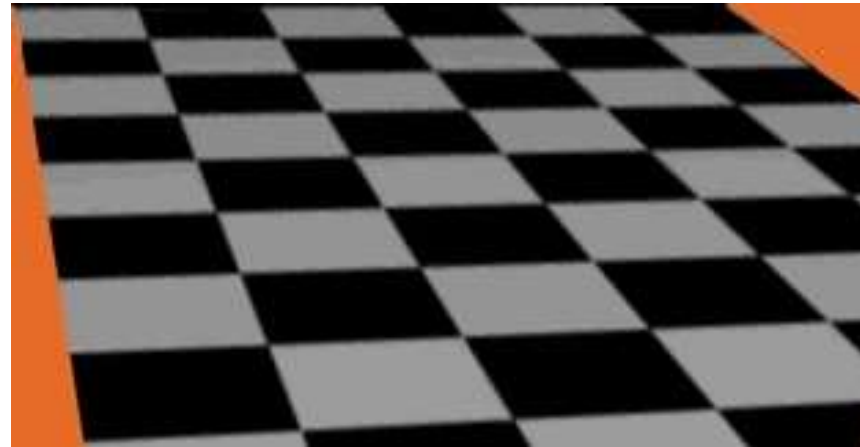
They do not evaporate into air or dissolve in water, and they are not broken down over time.

Asbestos is probably the best insulator known to man. Because asbestos has so many useful properties, it has been used in over 3,000 different products.

# What is Asbestos?

Usually asbestos is mixed with other materials to actually form the products. Floor tiles, for example, may contain only a small percentage of asbestos.

Depending on what the product is, the amount of asbestos in asbestos containing materials (ACM) may vary from 1%-100%.



Where is Asbestos Found?

# Where is Asbestos Found?

Asbestos may be found in many different products and many different places. Examples of products that might contain asbestos are:

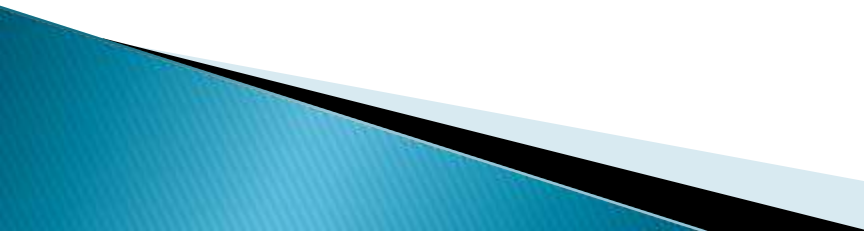
- ▶ Sprayed-on fire proofing and insulation in buildings
- ▶ Insulation for pipes and boilers
- ▶ Wall and ceiling insulation
- ▶ Ceiling tiles
- ▶ Floor tiles
- ▶ Putties, caulks, and cements (such as in chemical carrying cement pipes)

# Where is Asbestos Found?

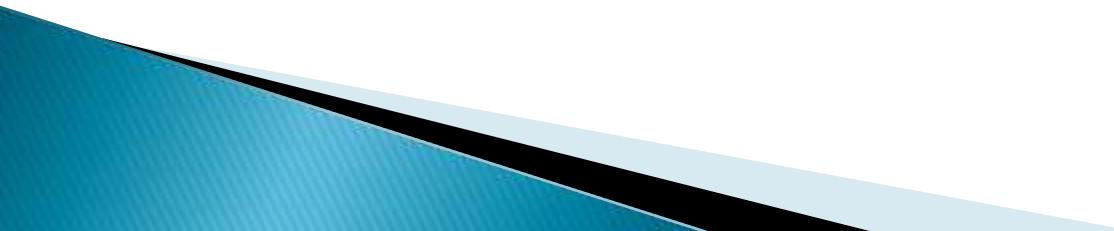
Asbestos may be found in many different products and many different places. Examples of products that might contain asbestos are:

- ▶ Roofing shingles
- ▶ Siding shingles on old residential buildings
- ▶ Wall and ceiling texture in older buildings and homes
- ▶ Joint compound in older buildings and homes
- ▶ Brake linings and clutch pads

# At UAH, Asbestos is most likely to be found in:

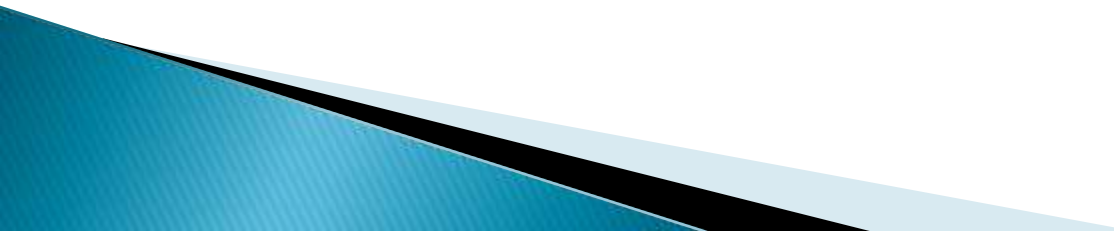
- ▶ Sprayed-on insulation in locations such as various mechanical rooms and steel reinforcing beams
  - ▶ pipe insulation in older buildings
  - ▶ Window glazing in older buildings
  - ▶ Fume hood interiors
  - ▶ Older lab benches and countertops
  - ▶ Cementitious duct work
- 

# At UAH, Asbestos is most likely to be found in:

- ▶ Most 9" floor tiles in buildings built prior to 1981
  - ▶ A few 12" floor tiles in buildings built prior to 1981
  - ▶ Insulation around pipes and boilers, and
  - ▶ Interiors of fire doors
- 

# Where is Asbestos?

Asbestos Products Banned but may be in older campus buildings:

- Fireproofing/insulation
  - Decorative uses
  - Corrugated paper
  - Rollboard
  - Commercial paper
  - Specialty paper
  - Flooring felt
  - New uses of asbestos
- 



# Where is Asbestos?

Asbestos containing products NOT banned:

- ▶ Asbestos–cement corrugated sheets
- ▶ Asbestos–cement flat sheets
- ▶ Asbestos clothing
- ▶ Pipeline wrap
- ▶ Roofing felt
- ▶ Vinyl–asbestos floor tile
- ▶ Asbestos–cement shingles
- ▶ Millboard

# Known ACM Locations at UAH

- ▶ Johnson Research Center
- ▶ Library
- ▶ Madison Hall
- ▶ Morton Hall
- ▶ Roberts Hall
- ▶ Spragins Hall
- ▶ Technology Hall
- ▶ Von Braun Research Hall
- ▶ University Center
- ▶ Southeast Campus Housing – floor tile only
- ▶ Shelbie King Hall

Contact OEHS (824-6053) for a complete list of materials tested in each building.

When is Asbestos Dangerous?

# When is Asbestos Dangerous?

■ Exposure to asbestos is not an automatic death sentence. Many factors determine health effects and how severe they will be.

**Factors include:** How many fibers entered the body • How long the exposure  
• If the material was inhaled or consumed in food or drink.

Fibers enter the body through the nose and mouth by inhalation or from drinking.

**Esophagus**

Cancer can develop from swallowing asbestos fibers

**Heart**

Blood flow to the lungs can be impaired and cause the heart to enlarge or fail.

**Larynx**

**Pleural membrane**

When scar tissue forms in the pleural membrane, the tissue is unable to expand and contract. Breathing can become painful or impossible.

**Right lung**

**Left lung**

**Bronchia**

**Bronchia**

**Alveoli**

**Alveoli**

**Diaphragm**

**Abdomen**

**Stomach  
Intestines**

Swallowed asbestos fibers build up and may cause cancer

Asbestos fibers in the alveoli can cause cancer and prevent exchange of oxygen and carbon dioxide between the lungs and red blood cells.

**Blood vessels**

**Alveoli**

**Asbestos fibers**

- ▶ The most common way for asbestos fibers to enter the body is through breathing.

# When is Asbestos Dangerous?

In fact, asbestos containing material is not generally considered to be harmful unless it is releasing dust or fibers into the air where they can be inhaled or ingested.

Many of the fibers will become trapped in the mucous membranes of the nose and throat where they can then be removed, but some may pass deep into the lungs, or, if swallowed, into the digestive tract.

Once they are trapped in the body, the fibers can cause health problems.

# When is Asbestos Dangerous?



- ▶ Asbestos is most hazardous when it is **friable**. The term "friable" means that the asbestos is easily crumbled by hand, releasing fibers into the air. Sprayed on asbestos insulation is highly friable. Asbestos floor tile is not.



# When is Asbestos Dangerous?

Asbestos-containing ceiling tiles, floor tiles, undamaged laboratory cabinet tops, shingles, fire doors, siding shingles, etc. **will not release asbestos fibers** unless they are disturbed or damaged in some way.

If an asbestos countertop is drilled or broken, for example, it may release fibers into the air. If it is left alone and not disturbed, it will not.

# When is Asbestos Dangerous?



- ▶ Asbestos pipe and boiler insulation does not present a hazard unless the protective canvas covering is cut or damaged in such a way that the asbestos underneath is actually exposed to the air.



# When is Asbestos Dangerous?

Damage and deterioration will increase the friability of asbestos-containing materials. Water damage, continual vibration, aging, and physical impact such as drilling, grinding, buffing, cutting, sawing, or striking can break the materials down making fiber release more likely.

# Health Effects

# Health Effects

Because it is so hard to destroy asbestos fibers, the body cannot break them down or remove them once they are lodged in lung or body tissues. They remain in place where they can cause disease.

There are three primary diseases associated with asbestos exposure:

- ▶ Asbestosis
  - ▶ Lung Cancer
  - ▶ Mesothelioma
- 

# Asbestosis

Asbestosis is a serious, chronic, non-cancerous respiratory disease. Inhaled asbestos fibers aggravate lung tissues, which cause them to scar.

Symptoms of asbestosis include shortness of breath and a dry crackling sound in the lungs while inhaling. In its advanced stages, the disease may cause cardiac failure.

# Asbestosis


There is no effective treatment for asbestosis; the disease is usually disabling or fatal. The risk of asbestosis is minimal for those who do not work with asbestos; the disease is rarely caused by neighborhood or family exposure.

Those who renovate or demolish buildings that contain asbestos may be at significant risk, depending on the nature of the exposure and precautions taken.

# Lung Cancer

Lung cancer causes the largest number of deaths related to asbestos exposure. The incidence of lung cancer in people who are directly involved in the mining, milling, manufacturing and use of asbestos and its products is much higher than in the general population.

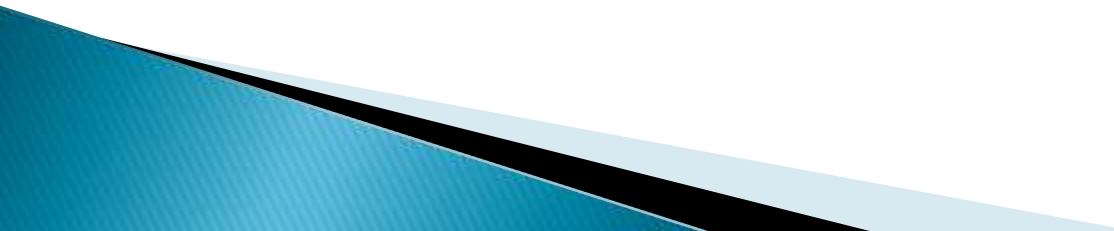
The most common symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anemia.



# Lung Cancer

People who have been exposed to asbestos and are also exposed to some other carcinogen -- such as cigarette smoke -- have a significantly greater risk of developing lung cancer than people who have only been exposed to asbestos.

One study found that asbestos workers who smoke are about 90 times more likely to develop lung cancer than people who neither smoke nor have been exposed to asbestos.



# Mesothelioma

Mesothelioma is a rare form of cancer that most often occurs in the thin membrane lining of the lungs, chest, abdomen, and (rarely) heart. About 200 cases are diagnosed each year in the United States. Virtually all cases of mesothelioma are linked with asbestos exposure.


Approximately 2 percent of all miners and textile workers who work with asbestos, and 10 percent of all workers who were involved in the manufacture of asbestos-containing gas masks, contract mesothelioma.



# Mesothelioma

People who work in asbestos mines, asbestos mills and factories, and shipyards that use asbestos, as well as people who manufacture and install asbestos insulation, have an increased risk of mesothelioma.

So do people who live with asbestos workers, near asbestos mining areas, near asbestos product factories or near shipyards where use of asbestos has produced large quantities of airborne asbestos fibers.



# Other Cancers

Evidence suggests that cancers in the esophagus, larynx, oral cavity, stomach, colon and kidney may be caused by ingesting asbestos.

For more information on asbestos-related cancers, contact your local chapter of the American Cancer Society.



# Determining Factors for Disease

# Determining Factors

Three things seem to determine your likelihood of developing one of these asbestos related diseases:

- 1. The amount and duration of exposure** - the more you are exposed to asbestos and the more fibers that enter your body, the more likely you are to develop asbestos related problems. While there is no "safe level" of asbestos exposure, people who are exposed more frequently over a long period of time are more at risk.

# Determining Factors

- 2. Whether or not you smoke** - if you smoke and you have been exposed to asbestos, you are far more likely to develop lung cancer than someone who does not smoke and who has not been exposed to asbestos.

If you work with asbestos or have been exposed to it, the first thing you should do to reduce your chances of developing cancer is to stop smoking.

# Determining Factors

Organizations that may offer programs, support, or information to help people stop smoking are:

- UAH Faculty and Staff Clinic (824-2100)
- National Cancer Institute (1-800-4-CANCER)
- American Heart Association (1-800-242-8721)
- American Lung Association (1-800-LUNGUSA)

# Determining Factors

- 3. Age** - cases of mesothelioma have occurred in the children of asbestos workers whose only exposures were from the dust brought home on the clothing of family members who worked with asbestos.

The younger people are when they inhale asbestos, the more likely they are to develop mesothelioma. This is why enormous efforts are being made to prevent school children from being exposed.

# Determining Factors

Because each exposure to asbestos increases the body burden of asbestos fibers, it is very important to reduce and minimize your exposure.



# How to Avoid Asbestos Exposure

# How to Avoid Exposure

In order to avoid being exposed to asbestos, you must be aware of the locations it is likely to be found.

**If you do not know whether something is asbestos or not, assume that it is** until it is verified otherwise.

Remember that you cannot tell if floor tiles or other materials contain asbestos just by looking at them.

# How to Avoid Exposure

The UAH OEHS can take samples from materials in order to determine whether or not they contain asbestos.

If you need to have materials analyzed or tested for asbestos, please contact the Facilities & Operations Work Order Desk at 824-6490.

**Never** try to take a sample yourself unless you are licensed to do so.

# How to Avoid Exposure

If you have reason to suspect that something is asbestos, either because it is labeled as such, or because it is something that is likely to contain asbestos (9" floor tile, for example). . .

**DO NOT DISTURB IT**



# How to Avoid Exposure

**Never...**

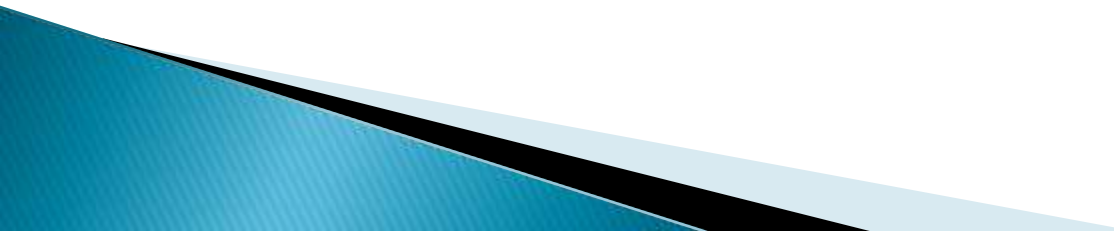
- ▶ Drill
- ▶ Hammer
- ▶ Cut
- ▶ Saw
- ▶ Break
- ▶ Damage
- ▶ Move
- ▶ Disturb

**...any asbestos-containing materials or suspected materials.**

# How to Avoid Exposure

The OEHS has surveyed all campus buildings built prior to 1981 for the presence of asbestos.

If you need to do work that might involve asbestos (lifting ceiling tiles, repairing insulated pipelines, etc.), check with OEHS (824-6053) to find out what can be done safely.



# How to Avoid Exposure

Do not remove ceiling tiles in the old section of the Library to perform maintenance work.

Pipe insulation, some ductwork and window caulking/glazing in VBRH and smaller quantities in Madison Hall contain asbestos.

Floor tiles and mastic in some UAH buildings contain asbestos.

Contact OEHS to determine what contains asbestos prior to maintenance and repairs. An asbestos abatement contractor may need to remove the asbestos prior to the work being performed.

# Housekeeping & Asbestos



Housekeepers and custodians should never sand or dry buff asbestos containing floor tiles, and only wet stripping methods may be used during stripping operations.

Low abrasion pads should be used at speeds below 300 rpm.



# Housekeeping & Asbestos

Broken and damaged asbestos floor tiles and pipe insulation must be removed by asbestos abatement workers. Report any suspect broken tiles to Facilities and Operations Work Order Desk at 824-6490.

# Asbestos Spills

It is important to report any damaged asbestos-containing materials to UAH Facilities & Operations Work Order Desk at 824-6490 immediately. If, for example, you discover some sprayed-on asbestos insulation has been knocked off of a ceiling or wall, this would be considered a "spill." As such it would need to be cleaned up immediately by asbestos abatement workers.

**Do not attempt to clean up spills yourself!**

# Asbestos Spills

**Do not attempt to clean up spills yourself!**

Disturb the material as little as possible. Also report any damaged pipe insulation, ceiling tile, 9" floor tile, fallen clumps of sprayed-on insulation, etc.

Take measures to prevent others from disturbing the spill until the Asbestos Abatement crew arrives.

# Avoiding Exposure

By knowing where asbestos is likely to be located and then taking measures not to disturb it, you will protect yourself and others from exposure to this hazardous substance.

Contact the OEHS, 824-6053 to determine if your activities will disturb asbestos containing materials.

