



# ASBESTOS AWARENESS TRAINING

**OKLAHOMA STATE UNIVERSITY**



**ENVIRONMENTAL  
HEALTH AND SAFETY**

**(405) 744-7241**

Current as of September 2022

# OBJECTIVES

- What is asbestos
- Types of asbestos
- Where asbestos is located
- Health effects of asbestos exposure
- Housekeeping
- Spills



# ASBESTOS AWARENESS



- Asbestos is the name applied to six naturally occurring minerals that are mined from the earth.
- **The different type of asbestos are:**
  - Amosite
  - Chrysotile
  - Tremolite
  - Actinolite
  - Anthophyllite
  - Crocidolite



# TYPES OF ASBESTOS



**Of these six, three are used more commonly:**

- **Chrysotile**
  - White - the most common type
- **Amosite**
  - Brown/off-white
- **Crocidolite**
  - Blue



# ASBESTOS AWARENESS

- All types of asbestos tend to break into very tiny fibers. These individual fibers are so small that many must be identified using a microscope.
- In fact, some individual fibers may be up to 700 times smaller than a human hair. Because asbestos fibers are so small, once released into the air, they may stay suspended there for hours or even days.
- Asbestos fibers are also virtually indestructible. They are resistant to chemicals and heat, and they are very stable in the environment.



# ASBESTOS AWARENESS

- 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 humankind. Because asbestos has so many useful properties, it has been used in over 3,000 different products.
- Usually, asbestos is mixed with other materials to 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 may vary from 1 to 100%.



# 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
- Black mastic
- Equipment such as furnaces, kilns, and ovens that are designed to handle heat or high temperatures



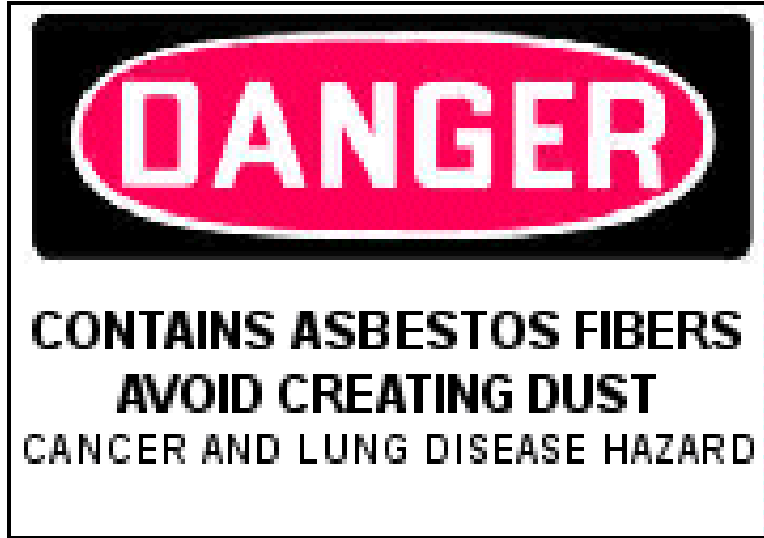
# WHERE IS ASBESTOS FOUND?

- Ceiling tiles
- Floor tiles/mastic
- 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
- **Fire rated doors**
  - **Should be checked prior to removal or construction**





# ASBESTOS SIGNAGE



- Buildings that have asbestos-containing materials in them will have notices posted near the main entrances, frequently near the fire alarm panel.



# CEILING TILES

Asbestos-containing ceiling tiles will not be labeled or marked. These tiles cannot be differentiated from other tile by visual means. They must be analyzed by a laboratory test.

















# FIRE-RATED DOORS

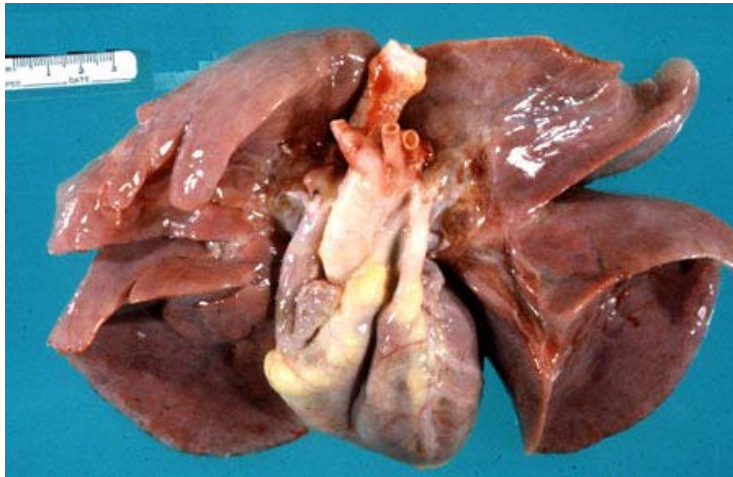
Asbestos-containing fire rated doors may or may not be labeled.



# THE DANGER OF ASBESTOS

The most common way for asbestos fibers to enter the body is through inhalation. 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.

**Normal Lung**



**Asbestos Lung**



# THE DANGER OF ASBESTOS

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



# ASBESTOS CEILING AND FLOOR TILES

- **Undamaged asbestos-containing ceiling tiles, floor tiles, 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 ceiling tile is drilled or broken, for example, it may release fibers into the air. If it is left alone and not disturbed, it will not.



# 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 and can cause illness.
- **There are three primary diseases associated with asbestos exposure:**
  - Asbestosis
  - Lung cancer
  - Mesothelioma



# HEALTH EFFECTS

**Esophagus**  
Cancer can develop from swallowing asbestos fibers

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

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

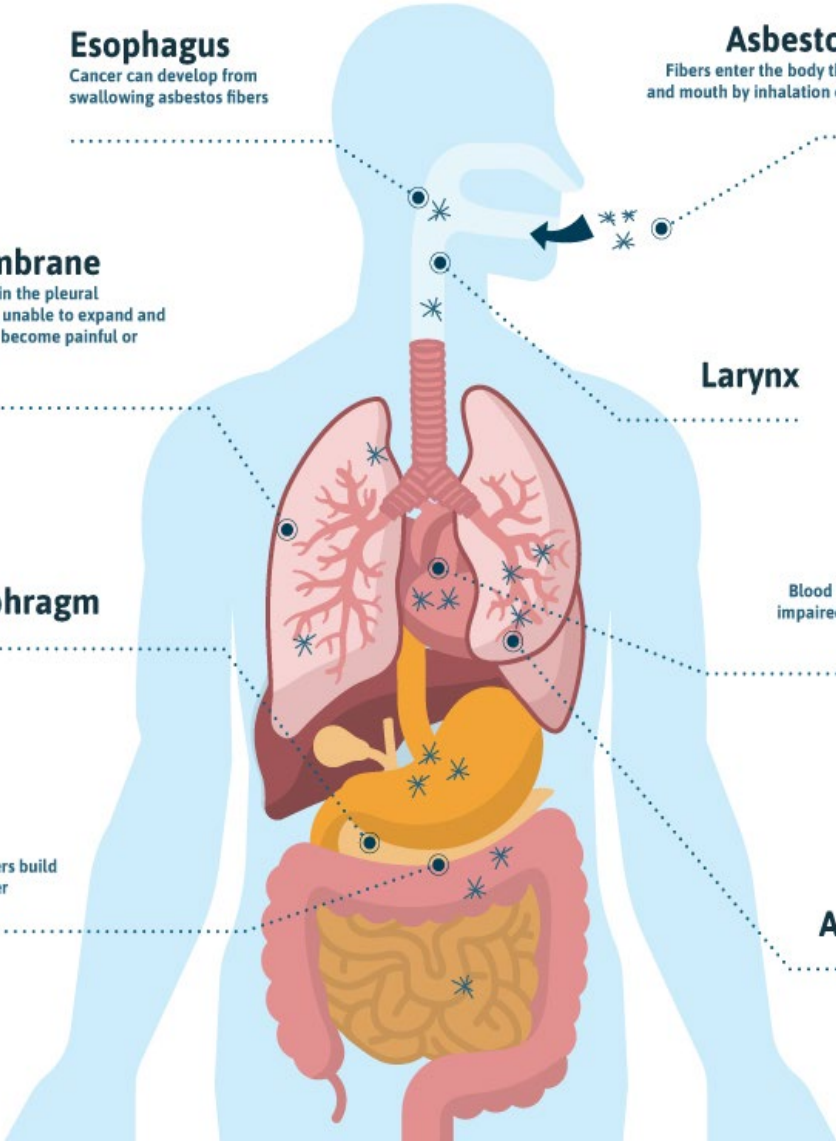
**Larynx**

**Diaphragm**

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

**Stomach & Intestines**  
Swallowed asbestos fibers build up and may cause cancer

**Alveoli**



# ASBESTOSIS

- Asbestosis is a chronic lung disease caused by inhaling asbestos fibers. Prolonged exposure to these fibers can cause lung tissue scarring and shortness of breath.
- Symptoms can range from mild to severe and usually don't appear until many years after continued exposure.
- 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 incidents 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 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, the heart. About 200 cases are diagnosed each year in the U.S.
- Virtually all cases of mesothelioma are linked with asbestos exposure.
- Approximately 2% of all miners and textile workers who work with asbestos and 10% of all workers who were involved in the manufacturing of asbestos-containing gas masks contract mesothelioma.



# MESOTHELIOMA

- People who work in asbestos mines, mills and factories, in shipyards that use asbestos, as well as those who manufacture and install asbestos insulation have an increased risk of mesothelioma.
- Other people at risk of mesothelioma are those who live with asbestos workers, near asbestos mining areas, product factories or shipyards where the 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 could be caused by ingesting asbestos.
- For more information on asbestos-related cancers, contact your local chapter of the American Cancer Society.



# ASBESTOS-RELATED ILLNESS DETERMINING FACTORS

- **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.



# ASBESTOS-RELATED ILLNESS DETERMINING FACTORS

- **Smoking**

- If you smoke and 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.



# ASBESTOS-RELATED ILLNESS DETERMINING FACTORS

- **Age**

- Causes of mesothelioma have occurred in the children of asbestos workers whose only exposure 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.



# HOW TO AVOID ASBESTOS 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 contains asbestos or not, assume that it does until it is confirmed otherwise.**
- Remember that you cannot tell if floor or ceiling tiles contain asbestos just by looking at them.





# HOW TO AVOID ASBESTOS EXPOSURE

- The OSU Asbestos Abatement Department has a laboratory and a licensed asbestos abatement crew that 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 Physical Plant Action Desk at extension 4-7154.
- **Never try to take a sample yourself unless you are licensed to do so.**

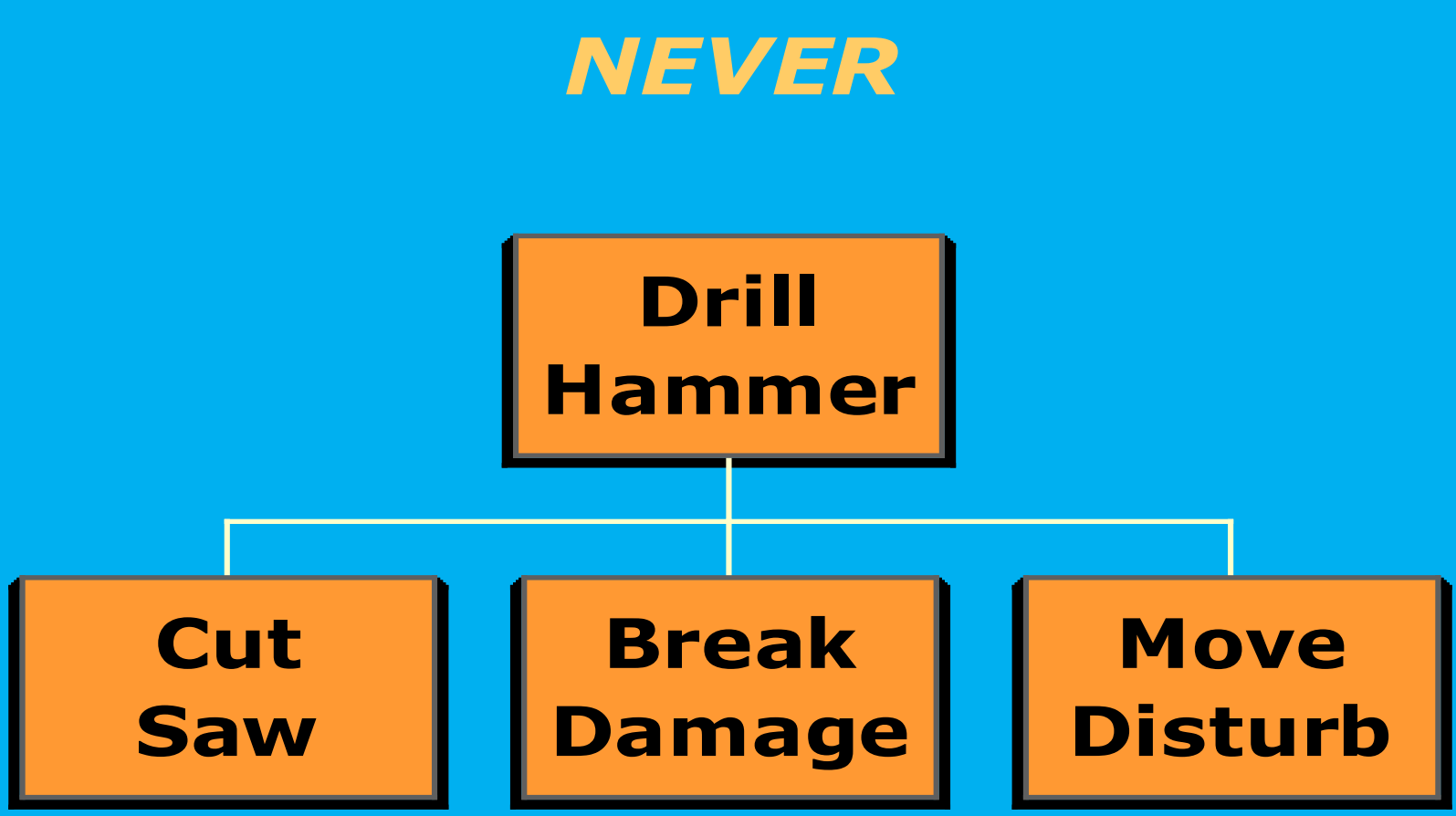


## HOW TO AVOID ASBESTOS EXPOSURE

- If you have a 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 (ex. 9 in. floor tile, black mastic), **DO NOT DISTURB IT.**
- During the course of your work, if you notice that the material changes or you become concerned that the material may contain asbestos, **STOP WORK IMMEDIATELY** and contact a supervisor.



# HOW TO AVOID ASBESTOS EXPOSURE



# HOW TO AVOID ASBESTOS EXPOSURE

- The OSU Asbestos Abatement Department has surveyed all campus buildings for the presence of asbestos.
- If you need to do work that might involve asbestos (lifting ceiling tiles, repairing insulated pipelines, etc), check with the OSU Asbestos Abatement Department to find out what can be done safely.
  - For example, before moving any ceiling tiles to perform maintenance work, it is necessary to ensure they do not contain asbestos.
  - If they do contain asbestos, they will need to be removed by licensed asbestos abatement workers before the work may be performed.



# HOUSEKEEPING

- 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.
- Broken and fallen ceiling tiles should be left in place until identified. They may only be removed after it is verified that they are safe. Asbestos tiles will be removed by the OSU asbestos abatement workers.
- Broken and damaged asbestos floor tiles must also be removed by OSU asbestos abatement workers.



# SPILLS

- **It is important to report any damaged asbestos-containing materials immediately to (405) 744-7154.**
  - For example, if you discover some asbestos that has been knocked off a ceiling or wall, this would be considered a “spill” and would need to be cleaned up immediately by OSU asbestos abatement workers.
- **DO NOT ATTEMPT TO CLEAN UP SPILLS YOURSELF!**



# SPILLS

- Report any damaged pipe insulation, ceiling tiles, 9 in. floor tiles, fallen clumps of sprayed on insulation, etc.
- Take measures to prevent others from disturbing the spill until the asbestos abatement crew arrives.
- 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.



# TAKEAWAYS

- What is asbestos
- Types of asbestos
- Where asbestos is located
- Health effects of asbestos exposure
- Housekeeping
- Spills





# PROGRAMS AND SERVICES

## ENVIRONMENTAL HEALTH AND SAFETY

- Fire Protection Engineering
- Life Safety and Emergency Preparedness
- Environmental Compliance
- Laboratory Safety
- Occupational Safety
- Occupational Health and Medical Surveillance
- Materials Management
- Industrial Hygiene
- Chemical Hygiene
- Safety Training



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QUESTIONS?

