

Asbestos Hazards: Characteristics and Health Effects

Asbestos is a group of compounds made up of fibers that form rocks underground.

Physical Characteristics

Asbestos **fibers** can be:

- Serpentine (curly, layered sheet structure)
- Amphibole (straight needle, chain-like structure)

The fibers are strong, flexible, resistant to heat, fire, chemicals, water, electricity, wear and friction and sound-absorbent.

People use asbestos fibers in **manufactured products** such as:

- Building materials (roofing, tiles, wall and pipe insulation)
- Friction materials (vehicle clutches, brake pads)
- Heat-resistant fabrics (clothing, carpeting, fire blankets)

Friable Asbestos

Asbestos that is not intact can be extremely dangerous to human health. There is no safe level of exposure. When it deteriorates over time and in harsh conditions to the point that you can easily crumble it by hand or turn it into a powder by sawing, scraping or sanding it, we call it **friable asbestos**.

Friable asbestos breaks into microscopic fibers that stay suspended in the air for hours or days. People may inhale the fibers or carry them away from the worksite where others may inhale them. Once asbestos fibers are in the lungs, they tend to stay there for many years.

Health Effects

Inhaling or ingesting asbestos fibers causes chronic (long-term) health effects including asbestosis, mesothelioma and lung cancer. People may develop these conditions 10 to 40 years after they've been exposed. The risk of developing these diseases generally increases with the intensity and duration of exposure and with individual risk factors, such as smoking and pre-existing lung disease.

Amphibole (straight) fibers are generally more dangerous than serpentine (curly) fibers because they are easier to inhale.

Using asbestos is restricted or banned in most countries.

Asbestosis

Asbestosis is a serious, long-term, slowly progressing lung disease. It is caused by asbestos fibers that aggravate and scar the lung tissue. The scars may make it difficult to breathe and difficult for oxygen and carbon dioxide to pass through the lungs. Smoking causes more scarring, which can accelerate the onset of asbestosis.

Regarding **symptoms**, some people are asymptomatic, and others have shortness of breath and a dry crackling sound upon inhaling. In its advanced stages, asbestosis may be disabling and can cause heart failure.

There is no **treatment** for asbestosis. Doctors focus on slowing the progression of the disease, treating its symptoms and preventing complications. Doctors may prescribe supplemental oxygen and a pulmonary rehabilitation program.

Lung Cancer

Lung cancer is a malignant tumor that invades and obstructs the lung's air passages. It causes the largest number of deaths related to asbestos exposure.

The **risk** of getting lung cancer after asbestos exposure depends on the type, severity and duration of the exposure and personal factors like age and tobacco use. Smoking greatly increases the risk of developing asbestos-related lung cancer and dying from it.

Lung cancer may not cause **symptoms** in the early stages. Eventually, it may cause chronic coughing, shortness of breath, persistent chest pains, hoarseness, weight loss or fever. Consult a physician to rule out or confirm lung cancer is present.

Treatment may include surgery, radiation therapy, chemotherapy or a combination of these activities.

Mesothelioma

Mesothelioma is a rare, aggressive form of cancer in the thin membranes that line the chest and abdomen. It is caused when people inhale or ingest asbestos fibers. Most people who are exposed to asbestos do not develop mesothelioma, but it is still a possibility of which you must be aware. Doctors report a history of asbestos exposure through work or living with an asbestos worker in about 80% of mesothelioma patients.

Mesothelioma has the same **symptoms** as lung cancer and may also include pain in the lower back and belly, nausea, vomiting and constipation.

The **treatment** options for mesothelioma are surgery, radiation therapy, chemotherapy or a combination of these activities.