



Virginia Department of Health

DIVISION OF ENVIRONMENTAL EPIDEMIOLOGY

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FREQUENTLY ASKED QUESTIONS (FAQs): ASBESTOS

What is asbestos?

Asbestos is a naturally occurring family of fibrous minerals found in certain types of rock formations. These minerals are made of long, thin fibers that vary in length and may be straight or curled. The typical size of asbestos fibers is 0.1 to 10 μm in length, a size that is not generally visible to the human eye but can be positively identified with a special type of microscope. The six types of asbestos are chrysotile, amosite, crocidolite, anthophyllite, actinolite, and tremolite. The minerals that have been most commonly used in buildings are chrysotile (white), amosite (brown), and crocidolite (blue). Approximately 95% of all asbestos used in commercial products is chrysotile.

Where was asbestos used?

Asbestos fibers are heat resistant, incombustible, possess great tensile strength, and cannot be easily degraded or destroyed. Asbestos has been used in the past in more than 3,000 products, including ceiling and floor tiles, thermal and electrical insulation, cement pipe and sheet, filters, coatings, brake linings, clutch facings, gaskets, plastics, fireproofing textiles, insulating papers, and protective clothing. The amount of asbestos contained in these products varies significantly from 1 to 100%, depending on the particular usage. Homes built before 1977 may have asbestos-containing materials. Most products made today do not contain asbestos.

What happens to asbestos when it enters the environment?

When asbestos fibers are disturbed, they may become suspended in the air for several hours, which increases the extent of asbestos exposure for individuals within the area. The potential of an asbestos-containing product to release fibers depends on its degree of friability in that the material can be crumbled, pulverized, or reduced to powder with hand pressure, which increases the likelihood to emit fibers. The fibrous or fluffy spray-applied asbestos materials found in many buildings for fire proofing, insulating, sound proofing, or decorative purposes are generally

considered friable. All forms of asbestos have a tendency to break into a dust of tiny fibers that can float in the air, stick to clothes, and may be easily inhaled or swallowed.

How might I be exposed to asbestos?

Human exposure to asbestos is primarily through inhalation and ingestion of fibers. Given that asbestos is so widely used, virtually everybody is potentially exposed to some extent by breathing low levels of asbestos present in the air. Higher levels of asbestos may be found near industries that make or use asbestos products; near a building that contains asbestos products and is being torn down or renovated; near an asbestos-related industry; or near a waste site where asbestos is not properly covered up or stored to protect it from wind erosion. Another point of exposure is by drinking water containing asbestos from natural sources or from asbestos-containing cement pipes in drinking water distribution systems.

Low levels of asbestos can be detected in almost any air sample, but are not likely to be harmful to your health. For example, in rural areas, an average of around 0.03 to 3 fibers is usually present in 1 cubic meter (f/m^3) of outdoor air. (A cubic meter is about the amount of air one breathes in 1 hour). Higher levels are found in cities, where there may be 3 to 300 f/m^3 . Close to an asbestos mine or factory, levels could reach 2,000 f/m^3 or higher. Levels could also be above average near a building that is being torn down or renovated, or near a hazardous waste site where asbestos is not properly covered up or stored to protect it from wind erosion.

The concentrations in indoor air depend on whether asbestos-containing materials are in good condition or deteriorated and easily crumbled. Concentrations measured in homes, schools, and other buildings that contain asbestos range from 30 to 6,000 f/m^3 . People who work with asbestos (e.g. miners, insulation workers, and automobile brake mechanics) are likely to be exposed to much higher levels of asbestos particles in the air.

One can also be exposed to asbestos by drinking fibers present in water. Even though asbestos does not dissolve in water, fibers can enter water by being eroded from natural deposits or piles of waste asbestos, or from cement pipe used to carry drinking water. Most drinking water supplies in the United States have concentrations less than 1 million fibers per liter (MFL). However, in some locations, there may be 10 to 100 MFL or higher.

How can asbestos enter and leave my body?

If one breathes asbestos fibers into the lungs, some of the fibers will be deposited in the air passage and on the cells that make up the lungs. Most fibers are removed from the lungs by being carried away in a layer of mucous to the throat, where they are swallowed into the stomach, which occurs within a few hours. Fibers that are deposited in the deepest parts of the lung are removed more slowly; however, some can remain in place for many years and may never be removed.

If one swallows asbestos fibers (either those present in water or those that are moved to the throat from the lungs), nearly all fibers pass along the intestines within a few days and are excreted in the feces. A small number of fibers may penetrate into cells that line the stomach or intestines while a few penetrate all the way through the blood. Additionally, some of the fibers become trapped in other tissues or some are removed in urine.

How can I prevent exposure during remodeling?

If you suspect your house contains asbestos and you are planning to do remodeling, check with your local health, environmental, or other appropriate officials to learn about proper handling and disposal procedures. It is not recommended to do even minor home repairs or improvements without a licensed professional because handling asbestos-containing materials may create an unnecessary hazard. There are licensed professionals who specialize in repair and removal of asbestos.

There are tips to follow if simple home improvements are done privately. Take precautions to avoid damaging asbestos-containing materials. Do not saw, sand, scrape, or drill holes in asbestos containing materials. When asbestos flooring needs to be replaced, install new flooring over top. Tearing up the old floor will cause fibers to be released, exposing individuals to high levels of asbestos. Use a wet mop when cleaning. Do not dust, sweep or vacuum debris that contains asbestos. Improper handling will increase the risk of exposure and health effects.

What are the health risks of asbestos exposure?

Although the inhalation of asbestos fibers can cause serious health risks, the risk of asbestos-related disease depends upon exposure to airborne fibers. The number of fibers a person must breathe to develop disease is uncertain. However, at very low exposure levels, the risk may be negligible or zero. Inhalation of asbestos fibers to very high levels in occupational workers has been shown to cause asbestosis (a fibrous scarring of the lungs), lung cancer (bronchogenic carcinoma), and mesothelioma (a cancer of the lining of the chest or abdominal cavity). These diseases do not develop immediately after inhalation of asbestos fibers; it may be 10 to 20 years or more before symptoms appear.

What are the interactive effects of asbestos and cigarette smoke?

Cigarette smoking and asbestos have a strong synergistic interaction in the development of lung cancer. Increased cases of asbestos-related lung cancer occurred among people who smoked (risk of lung cancer is already high for those who smoke) and were exposed to asbestos. In fact, smoking not only adds to the risk, it multiplies it. Due to some interaction in the body, people who are exposed to asbestos and also smoke have an increased risk of lung cancer fifty to ninety times greater than people who do not smoke and are not exposed to asbestos. In contrast to the

interactive effect of smoking on lung cancer, smoking does not appear to increase the risk of mesothelioma.

Is there a medical test to determine whether I have been exposed to asbestos?

The most common test used to determine if you have been exposed to asbestos is chest X-ray. Chest X-rays cannot detect asbestos fibers, but can detect early signs of lung disease caused by asbestos. Tests are available to measure asbestos fibers in urine, feces, mucous, or material rinsed out of the lung. Low levels of asbestos fibers are found in the body fluids in nearly all people. Thus, higher-than-average levels can only show that one has been exposed to asbestos, not whether one will experience any health effects.

Are there any standards or guidelines to protect people from exposure to asbestos?

The U.S. Occupational Safety and Health Administration (OSHA) has established an enforceable limit of 100,000 fibers with lengths greater than or equal to 5 µm per cubic meter of workplace air for 8-hour shifts and 40-hour work weeks. The Environmental Protection Agency (EPA) banned all new uses of asbestos on July 12, 1989; however, uses established before this date are still allowed. The EPA has established regulations that require school systems to inspect for damaged asbestos and to eliminate or reduce exposure by removing the asbestos or covering it so it cannot move into the air. The EPA has set a limit of 7 million fibers per liter (MFL) as the concentration of long asbestos fibers that may be present in drinking water.

Whom should I contact to get more information about asbestos?

If you require further information regarding the health risks of asbestos, contact the Virginia Department of Health, Division of Environmental Epidemiology, 109 Governor Street, 4th Floor, Richmond, Virginia 23219, or call (804) 864-8192.

Health questions can also be found at the Agency for Toxic Substances and Disease Registry (ATSDR)'s Information Center at 1-888-422-8737.

Quick links:

ATSDR - <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=4>

EPA - <http://www.epa.gov/asbestos/>

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