

"Asbestos" is the name given to a group of minerals that occur naturally as masses of fibers, which can be separated into thin threads and woven. There are four main types of asbestos:

- Chrysotile or white asbestos (fine, silky, flexible white fibers);
- Amosite (straight, brittle fibers that are light grey to pale brown in color);
- Crocidolite or blue asbestos (straight, blue fibers); and
- Anthophyllite (brittle, white fibers)

Because these fibers are not affected by heat or chemicals and because they do not conduct electricity, asbestos is widely used in many industries. The fiber masses have a tendency to break easily into a dust of tiny particles that can float in the air, stick to clothes, and may be easily inhaled or swallowed.



How is asbestos used?

Asbestos has been mined and used commercially in North America since 1880, but its use increased greatly during World War II. Asbestos has been used in many industries during the past four decades. For example, the building and construction industry uses it for strengthening cement and plastics as well as for heat insulation, fireproofing, and sound absorption. The shipbuilding industry has used asbestos to insulate boilers, steam pipes, hot water pipes, and nuclear reactors in ships. Because of its good friction and wear characteristics, asbestos is a component of the brakeshoes and clutch pads of cars and trucks. It is estimated that patents have been issued for more than 5,000 different asbestos-containing products.

National Cancer Institute

NIH Publication # 89-1594

Uses of Different Asbestos Fibers

Specific uses of asbestos vary according to the type of fiber. For example, Crocidolite, the strongest of the asbestos fibers, with resistance to rupture under tension as well as to chemicals, often is used in the manufacture of asbestos cement pipes. Amosite is widely used for heat insulation products such as fire-resistant insulation board. Chrysotile asbestos, with its long fibers, can be spun into yarn that, in the past, was used for protective clothing and heat insulation. The following list includes some of the products that now contain or have contained asbestos:

- Friction products such as clutch facings; brake linings for automobiles, railroad cars, and airplanes; and industrial friction materials.
- Asbestos cement sheet and pipe products used for water supply and sewage piping, roofing and siding, casings for electrical wires, fire protection material, chemical tanks, electrical switchboards and components, residential and industrial building materials.
- Floor tile; gaskets and packings; paints, coatings, and sealants; caulking and patching tape; ceiling tile; and plastics.
- Asbestos paper for table pads and heat-protective mats, insulation products, filters for beverages, electric wire insulation, small appliance components, and underlying material for sheet flooring.
- Asbestos textiles for packing components, roofing materials, heat and fire protective clothing, electrical wire and pipe insulation, and theater curtains and fireproof draperies.

The use of asbestos dropped from 560,000 metric tons in 1979 to 217,000 metric tons in 1983 due partially

In 1979, U.S. consumption of asbestos amounted to about 560,000 metric tons, but by 1983 the annual total had dropped to 217,000 tons. This reduction was due partially to regulatory actions that banned the use of asbestos in clothing, wallboard patching compounds, and gas heaters. In addition, asbestos was voluntarily withdrawn by manufacturers of electric hair dryers in 1979.



What are the health hazards of exposure to asbestos?

Exposure to asbestos may increase the risk of these serious diseases:

- Asbestosis—a chronic lung ailment that can produce shortness of breath, permanent lung damage, and increased risk of dangerous lung infections
- Lung cancer
- Mesothelioma—a relatively rare cancer of the thin membranes lining the chest and abdomen
- Certain other cancers such as cancers of the larynx and esophagus

While all types of asbestos fibers may increase the risk of developing these diseases, some scientists believe that crocidolite and amosite are more likely to produce mesothelioma than is chrysotile. However, because most workers have been exposed to a variety of asbestos fiber types during their lifetime, it has not yet been possible to confirm this finding.

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Who is at risk?

Since the early 1940's, millions of American workers have been exposed to asbestos dust, including many of the 4.5 million men and women who worked in shipyards during the peak shipbuilding years of World War II. Health hazards from asbestos dust have been recognized among workers exposed in shipbuilding trades, asbestos mining, asbestos manufacturing, insulation work in the construction and building trades, automotive brake repair, and a variety of other trades. Demolition workers and drywall removers also may be heavily exposed to asbestos dust. As a result of Government regulations and improved work practices, current workers (those without previous exposure) can expect to face smaller risks than those exposed in the past.

Although it is known that the risk to workers increases with heavier exposure and longer exposure time, studies have found asbestos-related diseases in some shipyard workers exposed to asbestos for only brief periods of time (as little as a month or two). Even workers who may not have worked directly with asbestos, but whose jobs were located near contaminated areas, have developed asbestosis, mesothelioma, or other cancers associated with asbestos exposure.

Workers may not begin to show signs of asbestos-related diseases for many years following first exposure. For example, the period of time between first exposure to asbestos and the appearance of lung cancer is generally 15 years or more; a lag of 30 to 35 years is not unusual. The lag period for development of mesothelioma and asbestosis is even greater, often as long as 40 to 45 years.

There is also some evidence that family members of workers heavily exposed to asbestos face an increased risk of developing mesothelioma and perhaps other asbestos-related diseases, probably as a result of exposure to asbestos dust brought into the home on the shoes, clothing, skin, and hair of workers.



How great is the risk?

Not all workers exposed to asbestos will develop diseases related to their exposure. In fact, many will not suffer any ill effects.

Asbestos bonded in finished products is not a risk to health, as long as the product is not damaged or disturbed (for example, by sawing or drilling) in such a way as to release fibers into the air. Since the fibers are nearly indestructible, a risk exists if they are set free. Once the asbestos particles work their way into body tissues, they tend to stay there indefinitely.

Some studies have shown that 25 percent of all deaths among certain workers heavily exposed to asbestos were caused by lung cancer. This compares to 4 to 5 percent of all deaths caused by lung cancer among the general population. These same studies showed that 7 percent of the asbestos-exposed workers died of asbestosis and 7 to 10 percent died of mesothelioma.



How does smoking affect risk?

Many studies have shown that the combination of smoking and asbestos exposure is particularly hazardous. While asbestos exposure itself can increase the risk of developing lung cancer, asbestos and cigarette smoking together may increase lung cancer risk over the already high risk due to smoking alone. Cigarette smokers,

on the average, are 10 times as likely to develop lung cancer as nonsmokers. Smokers who are also heavily exposed to asbestos have been shown to be up to 90 times more likely to develop lung cancer than nonexposed individuals who do not smoke.

There is evidence that quitting smoking will reduce risk among asbestos-exposed workers, perhaps by as much as half or more. Workers who were exposed to asbestos on the job at any time during their lives or who suspect they may have been exposed should not smoke. If they now smoke, they should stop.



Who needs to be examined?

Individuals who have been exposed (or suspect they have been exposed) to asbestos dust on the job, or at home via a family contact, should inform their physician of their work history and any symptoms. A thorough physical examination, including a chest x-ray and lung function tests, may be recommended. Interpretation of the chest x-ray may require the help of a specialist who is experienced in reading x-rays for asbestos-related diseases. Other tests also may be necessary.

The symptoms of asbestos-related diseases may not become apparent for many decades after exposure. If any of the following symptoms develop, a physical examination should be scheduled without delay:

- ☐ Shortness of breath
- ☐ A cough or change in cough pattern
- ☐ Blood in the sputum (fluid) coughed up from the lungs
- ☐ Pain in the chest or abdomen
- ☐ Difficulty in swallowing or prolonged hoarseness
- ☐ Significant weight loss

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What are the treatments for asbestos-related diseases?

The key to successful treatment of asbestos-related diseases lies in early detection. The health problems caused by asbestosis are due mainly to lung infections, like pneumonia, that attack weakened lungs. Early medical attention and prompt, aggressive treatment offer the best chance of success in controlling such infections. As a protective measure, depending on the situation, doctors may give one of the vaccines against influenza or pneumococcal pneumonia.

Treatment of cancer is tailored to the individual patient and may include surgery, drugs, radiation, or combinations of these therapies. Information about cancer treatment is available from the National Cancer Institute-supported Cancer Information Service (CIS), whose toll-free telephone number is 1-800-4-CANCER.



How can current workers protect themselves?

Employers are required to follow regulations dealing with asbestos exposure on the job that have been issued by the Occupational Safety and Health Administration (OSHA), the Federal agency responsible for health and safety regulations in the workplace. Workers should use all protective equipment provided by their employers and follow recommended work practices and safety procedures. Workers who are or who have been exposed to asbestos should not smoke cigarettes.

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If workers are concerned about asbestos exposure in the workplace, they should discuss the situation with other employees, their union, and their employers. If necessary, OSHA can provide more information or make an inspection. The address is Office of Information, OSHA, Washington, DC 20210; telephone 202-523-8148.

A resource for insulation installers who may be exposed to asbestos is the National Institute for Occupational Safety and Health (NIOSH), 4676 Columbia Parkway, Cincinnati, OH 45226. The toll-free telephone number is 1-800-356-4674.

Exposure to asbestos and any other substances that may aggravate respiratory ailments should be avoided. NIOSH can provide information on possible workplace asbestos exposures.



More information about asbestos exposure

Q. Will the Government provide examinations and treatment, or will the Government pay for these? What about insurance coverage?

A. Medical services related to asbestos exposure are available through the Government only for certain groups of eligible individuals. In general, exposed individuals must pay for their own medical services unless they are covered by private or Government health insurance programs. Medicare may reimburse people with symptoms of asbestos-related diseases for the costs of appropriate diagnosis and treatment.

People with asbestos-related diseases also may qualify for financial help, including medical payments, under state worker compensation laws. Because eligibility requirements vary from

state to state, workers should contact the worker compensation program in the state where the last exposure occurred.

If exposure resulted from employment in a Federal agency (military or civilian), medical expenses and other compensation may be covered by the Federal Employees' Compensation Act (FECA). Workers now employed in a shipyard by a private employer, or those who have been in the past, may be covered under the Longshoremen and Harbor Workers Compensation Act. Information about eligibility or how to file a claim is available from the U.S. Department of Labor, Office of Workers Compensation Programs, Employment Standards Administration, 200 Constitution Avenue NW, Washington, DC 20210; telephone 202-724-0713. Retired military personnel and their eligible dependents may receive health care at any Department of Defense medical facility. If no such facility is available within 40 miles of home, care may be obtained at a Veterans Administration or Public Health Service hospital. Where no Federal facility is available, civilian facilities may be used under the Civilian Health and Medical Program for the Uniformed Services (CHAMPUS). Persons over age 65 may be covered by Medicare.

Former members of the military who believe they may have a service-related medical problem may inquire about care at a Veterans Administration facility or telephone the local Veterans Administration office.

Workers also may wish to contact their international unions for information on other sources of medical help and insurance matters.

Q. Will doctors know what to do about asbestos-related health risks?

A. In 1978, the U.S. Surgeon General sent a special alert to 400,000 doctors advising them about the care of patients who were or may

have been exposed to asbestos dust and/or patients with asbestos-related diseases. In addition, the U.S. Department of Health and Human Services, with help from unions, the asbestos industry, and health organizations such as the American Cancer Society and the American Lung Association, conducted an educational program for doctors and the public.

Q. Are there nonoccupational exposures from products contaminated with asbestos particles?

A. Asbestos is so widely used that the entire population has been exposed to some degree. Air, beverages, drinking water, food, drugs and dental preparations, and a variety of consumer products all may contain small amounts of asbestos. In addition, asbestos fibers are released into the environment from the natural occurrence of asbestos in the earth and as a result of wear and deterioration of asbestos products.

The Environmental Protection Agency (EPA) maintains the Toxic Substance Control Act (TSCA) Assistance Office to answer questions about toxic substances, including asbestos. The telephone number for this service is 202-554-1404. The EPA can provide printed material and can answer questions on subjects such as how to remove asbestos properly, asbestos in the environment, and air-monitoring techniques. In addition, the EPA has published a book that offers suggestions for controlling asbestos exposure inside schools and other buildings. This publication, which is entitled *Guidance for Controlling Asbestos-Containing Materials in Buildings*, is available from the TSCA Industry Assistance Office, EPA, TS-799, 401 M Street SW, Washington, DC 20460.

The Food and Drug Administration (FDA) is concerned with asbestos contamination of foods, drugs, and cosmetics. For answers to questions on these topics, write to Consumer Inquiries, FDA, 5600 Fishers Lane, HFE-88, Rockville, MD 20857. The Consumer Product Safety Commission (CPSC) is responsible for regulation of asbestos in consumer products. For questions about the potential hazards of commercial products, write to the CPSC at 5401 Westbard Avenue, Bethesda, MD 20207 or call 1-800-638-CPSC.



or further information

These organizations also may be able to provide information about asbestos exposure:

Labor—international unions, or the International Association of Machinists and Aerospace Workers, Department of Occupational Safety and Health and Community Service, 1300 Connecticut Avenue NW, Washington, DC 20036.

Industry—Asbestos Information Association/North America, 1725 Jefferson-Davis Highway, Arlington, VA 22202.

Consumer—White Lung Association, 1114 Cathedral Street, Baltimore, MD 21201.

Additional information on lung disease, cancer, and smoking is provided by the American Lung Association and the American Cancer Society. Local chapters of these organizations are listed in telephone directories. Material about cancer and how to quit smoking is available from the National Cancer Institute, Building 31, Room 10A24, Bethesda, MD 20892.