CANCER FACTS
National Cancer Institute • National Institutes of Health

Questions and Answers About Asbestos Exposure

1. What is asbestos?

"Asbestos" is the name given to a group of minerals that occur naturally as masses of strong, flexible fibers that can be separated into thin threads and woven. These fibers are not affected by heat or chemicals and do not conduct electricity. For these reasons, asbestos has been widely used in many industries. Four types of asbestos have been commonly used:

- Chrysotile, or white asbestos (curly, flexible white fibers), which accounts for about 90 percent of the asbestos currently used in industry;
- Amosite (straight, brittle fibers that are light gray to pale brown in color);
- Crocidolite, or blue asbestos (straight blue fibers); and
- Anthophyllite (brittle white fibers).

Chrysotile asbestos, with its curly fibers, is in the serpentine family of minerals. The other types of asbestos, which all have needle-like fibers, are known as amphiboles.

Asbestos fiber masses tend to break easily into a dust composed of tiny particles that can float in the air and stick to clothes. The fibers may be easily inhaled or swallowed and can cause serious health problems.

2. How is asbestos used?

Asbestos has been mined and used commercially in North America since the late 1800s, but its use increased greatly during World War II. Since then, it has been used in many industries. For example, the building and construction industry uses it for strengthening cement and plastics as well as for insulation, fireproofing, and sound absorption. The shipbuilding industry has used asbestos to insulate boilers, steampipes, hot water pipes, and nuclear reactors in ships. The automotive industry uses asbestos in vehicle brakeshoes and clutch pads. More than 5,000 products contain or have contained asbestos, some of which are listed below:

- 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, and residential and industrial building materials;

- Friction products, such as clutch facings; brake linings for automobiles, railroad cars, and airplanes; and industrial friction materials;

- Products containing asbestos paper, such as table pads and heat-protective mats, heat and electrical wire insulation, industrial filters for beverages, small appliance components, and underlying material for sheet flooring;

- Asbestos textile products, such as packing components, roofing materials, heat- and fire-resistant clothing, and fireproof draperies; and

- Other products, including ceiling and floor tile; gaskets and packings; paints, coatings, and sealants; caulking and patching tape; and plastics.

In the late 1970s, the U.S. Consumer Product Safety Commission banned the use of asbestos in wallboard patching compounds and gas fireplaces because these products released excessive amounts of asbestos fibers into the environment. In addition, asbestos was voluntarily withdrawn by manufacturers of electric hair dryers. These and other regulatory actions, coupled with widespread public concern about the hazards of asbestos, have resulted in a significant annual decline in U.S. use of asbestos: Domestic use of asbestos amounted to about 560,000 metric tons in 1979, but it had dropped to about 55,000 metric tons by 1989.

3. What are the health hazards of exposure to asbestos?

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

- Asbestosis—a chronic lung ailment that can produce shortness of breath and permanent lung damage and increase the risk of dangerous lung infections;

- Lung cancer;

- Mesothelioma—a relatively rare cancer of the thin membranes that line the chest and abdomen; and

- Other cancers, such as those of the larynx and of the gastrointestinal tract.

4. Who is at risk?

Since the early 1940s, 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 in workers exposed in shipbuilding trades, asbestos mining and milling, manufacturing of asbestos textiles and other asbestos products, insulation work in the construction and building trades, brake repair, and a variety of other trades. Demolition workers, drywall removers, and firefighters also may be exposed to asbestos dust. As a result of Government regulations and improved work practices, today's workers (those without previous exposure) are likely to face smaller risks than did those exposed in the past.

Although it is known that the risk to workers increases with heavier exposure and longer exposure time, investigators have found asbestos-related diseases in some shipyard workers exposed to high levels of asbestos fibers for only brief periods (as little as 1 or 2 months). Even workers who may not have worked directly with asbestos but whose jobs were located near contaminated areas have developed asbestosis, mesothelioma, and other cancers associated with asbestos exposure.

Generally, workers who develop asbestos-related diseases show no signs of illness until many years after first exposure. For example, the 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. This risk is thought to result from exposure to asbestos dust brought into the home on the shoes, clothing, skin, and hair of workers.

5. How great is the risk?

Not all workers exposed to asbestos will develop diseases related to their exposure. In fact, many will experience no ill effects.

Asbestos that is bonded into finished products such as walls, tiles, and pipes poses no risk to health as long as it is not damaged or disturbed (for example, by sawing or drilling) in such a way as to release fibers into the air. When asbestos particles are set free and inhaled, however, exposed individuals are at risk of developing an asbestos-related disease. Once these nearly indestructible fibers work their way into body tissues, they tend to stay there indefinitely.

The risk of developing asbestos-related diseases varies with the type of industry in which the exposure occurred and with the extent of the exposure. In addition, different

types of asbestos fibers may be associated with different health risks. For example, results of several studies suggest that crocidolite and amosite are more likely than chrysotile to cause lung cancer, asbestosis, and, in particular, mesothelioma. Even so, no fiber type can be considered harmless, and proper safety precautions should always be taken by people working with asbestos.

6. How does smoking affect risk?

Many studies have shown that the combination of smoking and asbestos exposure is particularly hazardous. Cigarette smokers, on the average, are 10 times as likely to develop lung cancer as are nonsmokers. For nonsmokers who work with asbestos, the risk is about five times greater than for those in the general population. By contrast, smokers who also are heavily exposed to asbestos are as much as 90 times more likely to develop lung cancer than are nonexposed individuals who do not smoke. Smoking does not appear to increase the risk of mesothelioma, however.

There is evidence that quitting smoking will reduce the risk of lung cancer among asbestos-exposed workers, perhaps by as much as half or more after at least 5 years without smoking. People who were exposed to asbestos on the job at any time during their life or who suspect they may have been exposed ***should not smoke***. If they smoke, they should stop.

7. 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 exposure 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.

As noted earlier, 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 a 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; and/or
- Significant weight loss.

8. 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. Depending on the situation, doctors may give a vaccine against influenza or pneumococcal pneumonia as a protective measure.

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

9. How can 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. Regulations related to mine safety are enforced by the Mine Safety and Health Administration (MSHA). 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.

Workers who are concerned about asbestos exposure in the workplace should discuss the situation with other employees, their union, and their employers. If necessary, OSHA can provide more information or make an inspection. Area offices of OSHA are listed in the "United States Government" section of telephone directories' blue pages (under "Department of Labor"). If no listing is found, workers may call or write to one of the OSHA regional offices listed on page 9. Mine workers may contact MSHA's Office of Standards, Variances, and Regulation at Room 627, 4015 Wilson Boulevard, Arlington, VA 22203; the telephone number is 703-235-1910.

The National Institute for Occupational Safety and Health (NIOSH) is another Federal agency that is concerned with asbestos exposure in the workplace. The Institute conducts asbestos-related research, evaluates work sites for possible health hazards, and makes safety recommendations. In addition, NIOSH distributes publications on the health effects of asbestos exposure and can suggest additional sources of information. The address is Office of Information, National Institute of Occupational Safety and

Health, 4676 Columbia Parkway/Mailstop C-19, Cincinnati, OH 45226. The toll-free telephone number is 1-800-35-NIOSH (1-800-356-4674).

10. What should people who have been exposed to asbestos do?

It is important for exposed individuals to:

- Stop smoking;
- Get regular health checkups;
- Get prompt medical attention for any respiratory illness; and
- Use all protective equipment, work practices, and safety procedures designed for working around asbestos.

11. Will the Government provide examinations and treatment or pay for such services? What about insurance coverage?

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. Medicare may reimburse people with symptoms of asbestos-related diseases for the costs of diagnosis and treatment (following review of medical procedures for appropriateness). General and specific information about benefits is available from the Medicare office serving each state; for the telephone number of the nearest office, call 1-800-772-1213.

People with asbestos-related diseases also may qualify for financial help, including medical payments, under state workers' compensation laws. Because eligibility requirements vary from state to state, workers should contact the workers' compensation program in the state where the last exposure occurred. (The telephone number may be found in the blue pages of a local telephone directory.)

If exposure occurred during employment with a Federal agency (military or civilian), medical expenses and other compensation may be covered by the Federal Employees' Compensation Act. Workers who are or were employed in a shipyard by a private employer 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, Room S-3229, 200 Constitution Avenue NW, Washington, DC 20210; the telephone number is 202-219-7552.

Retired military personnel and their eligible dependents may receive health care at any Department of Defense medical facility, Department of Veterans Affairs (VA) hospital, 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. Those 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 VA facility or telephone the local VA office.

Workers also may wish to contact their international union for information on other sources of medical help and insurance matters. One organization, the Asbestos Victims Special Fund Trust, provides financial assistance to asbestos victims who have not received workers' compensation or compensation through legal avenues. Information is available from the Trust at Suite M-11, 1500 Walnut Street, Philadelphia, PA 19102; the telephone number is 1-800-447-7590.

12. Is there a danger of nonoccupational exposure from products contaminated with asbestos particles?

Asbestos is so widely used that the entire population has been exposed to some degree. Air, beverages, drinking water, food, drug 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 natural deposits in the earth and as a result of wear and deterioration of asbestos products.

The U.S. Environmental Protection Agency (EPA) regulates the general public's exposure to asbestos in buildings, drinking water, and the environment. The EPA's Toxic Substances Control Act (TSCA) Assistance Office can answer questions about toxic substances, including asbestos. Printed material is available on a number of topics, particularly on controlling asbestos exposure in schools and other buildings. The TSCA office can provide information about accredited laboratories for asbestos testing and can refer inquirers to other resources on asbestos. Questions may be directed to the TSCA Assistance Office, U.S. Environmental Protection Agency, 7408 M Street SW, Washington, DC 20024; the telephone number is 202-554-1404.

The Consumer Product Safety Commission (CPSC) is responsible for the regulation of asbestos in consumer products. The CPSC maintains a toll-free information line on the potential hazards of commercial products; the telephone number is 1-800-638-2772. In addition, CPSC provides information about laboratories for asbestos testing, guidelines for repairing and removing asbestos, and general information about asbestos in the home. Publications are available from the Office of Public Affairs, Consumer Product Safety Commission, 4330 East-West Highway, Bethesda, MD 20816; the telephone number is 301-504-0580.

The U.S. Food and Drug Administration is concerned with asbestos contamination of foods, drugs, and cosmetics and will answer questions on these topics. The address is Office of Consumer Affairs, Food and Drug Administration, HFE-88, 5600 Fishers Lane, Rockville, MD 20857; the telephone number is 301-443-3170.

13. What other organizations offer information related to asbestos exposure?

The American Lung Association and the American Cancer Society can provide information about lung disease, cancer, and smoking. Local chapters of these organizations are listed in telephone directories. Material about cancer and how to quit smoking is available by calling the National Cancer Institute-supported Cancer Information Service (CIS). The CIS, a program of the National Cancer Institute, provides a nationwide telephone service for cancer patients and their families, the public, and health care professionals. CIS information specialists have extensive training in providing up-to-date and understandable information about cancer and cancer research. They can answer questions in English and Spanish and can send free printed material. In addition, CIS offices serve specific geographic areas and have information about cancer-related services and resources in their region. The toll-free number of the CIS is 1-800-4-CANCER (1-800-422-6237).

Occupational Safety and Health Administration (OSHA)
Regional Offices

Region I (serves Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, and Vermont)	First Floor 133 Portland Street Boston, MA 02114 617-565-7164
Region II (serves New Jersey, New York, Puerto Rico, and the Virgin Islands)	Room 670 201 Varick Street New York, NY 10014 212-337-2356
Region III (serves the District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, and West Virginia)	Gateway Building, Suite 2100 3535 Market Street Philadelphia, PA 19104 215-596-1201
Region IV (serves Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee)	Suite 587 1375 Peachtree Street NE Atlanta, GA 30367 404-347-3573
Region V (serves Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin)	Room 3244 230 South Dearborn Street Chicago, IL 60604 312-353-2220
Region VI (serves Arkansas, Louisiana, New Mexico, Oklahoma, and Texas)	Room 602 525 Griffin Street Dallas, TX 75202 214-767-4731
Region VII (serves Iowa, Kansas, Missouri, and Nebraska)	Room 406 911 Walnut Street Kansas City, MO 64106 816-426-5861
Region VIII (serves Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming)	Federal Building, Room 1576 1961 Stout Street Denver, CO 80294 303-844-3061

Region IX (serves American Samoa, Arizona, California, Guam, Hawaii, Nevada, and Trust Territories of the Pacific)	Room 415 71 Stevenson Street San Francisco, CA 94105 415-744-6670
Region X (serves Alaska, Idaho, Oregon, and Washington)	Suite 715 1111 Third Avenue Seattle, WA 98101-3212 206-553-5930