
CANCER FACTS

National Cancer Institute • National Institutes of Health
Department of Health and Human Services

Asbestos Exposure: Questions and Answers

Key Points

- “Asbestos” is the name given to a group of minerals that occur naturally as bundles of fibers (see Question 1).
- Exposure to asbestos may increase the risk of asbestosis, lung cancer, mesothelioma, and other cancers (see Question 3).
- Smokers who are also exposed to asbestos have a greatly increased risk of lung cancer (see Question 6).
- Individuals who have been exposed (or suspect they have been exposed) to asbestos fibers on the job or at home via a family contact should inform their physician of their exposure history and any symptoms (see Question 7).
- Government agencies can provide additional information on asbestos exposure (see Questions 8, 9, and 11).
- References

1. What is asbestos?

“Asbestos” is the name given to a group of minerals that occur naturally as bundles of fibers which can be separated into thin threads. 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 used commercially:

- Chrysotile, or white asbestos;
- Crocidolite, or blue asbestos;
- Amosite, which usually has brown fibers; and



- Anthophyllite, which usually has gray fibers.

Chrysotile asbestos, with its curly fibers, is in the serpentine family of minerals. The other types of asbestos, which all have rod-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 was mined and used commercially in North America beginning in the late 1800s. Its use increased greatly during World War II. Since then, it has been used in many industries. For example, the building and construction industry has used it for strengthening cement and plastics as well as for insulation, fireproofing, and sound absorption. The shipbuilding industry has used asbestos to insulate boilers, steam pipes, and hot water pipes. The automotive industry uses asbestos in vehicle brakeshoes and clutch pads. More than 5,000 products contain or have contained asbestos. Some of them 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, electrical switchboards and components, and residential and industrial building materials;
- Friction products, such as clutch facings, brake linings for automobiles, gaskets, 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, and underlying material for sheet flooring;
- Asbestos textile products, such as packing components, roofing materials, and heat- and fire-resistant fabrics (including blankets and curtains); and
- Other products, including ceiling and floor tile; gaskets and packings; paints, coatings, and adhesives; caulking and patching tape; artificial ashes and embers for use in gas-fired fireplaces; plastics; vermiculite-containing consumer garden products; and some talc-containing crayons.

In the late 1970s, the U.S. Consumer Product Safety Commission (CPSC) banned the use of asbestos in wallboard patching compounds and gas fireplaces because the asbestos fibers in these products could be released into the environment during use. Additionally, asbestos was voluntarily withdrawn by manufacturers of electric hair dryers. In 1989, the U.S. Environmental Protection Agency (EPA) banned all new uses of asbestos; uses established prior to 1989 are still allowed. The EPA has established regulations that

require school systems to inspect for damaged asbestos and to eliminate or reduce the exposure to occupants by removing the asbestos or encasing it. In June 2000, the CPSC concluded that the risk of children's exposure to asbestos fibers in crayons was extremely low. However, the U.S. manufacturers of these crayons agreed to reformulate their products within a year. In August 2000, the EPA recommended that consumers reduce possible asbestos exposure from vermiculite-containing garden products by limiting the amount of dust produced during use. The EPA suggested that consumers use vermiculite outdoors or in a well-ventilated area; keep vermiculite damp while using it; avoid bringing dust from vermiculite use into the home on clothing; and use premixed potting soil, which is less likely to generate dust.

The regulations described above and other 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 consumption of asbestos amounted to about 719,000 metric tons in 1973, but it had dropped to about 9,000 metric tons by 2002. Asbestos is currently used most frequently in gaskets and in roofing and friction products.

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, coughing, and permanent lung damage;
- 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, oropharynx, gastrointestinal tract, and kidney.

4. Who is at risk?

Nearly everyone is exposed to asbestos at some time during their life. However, most people do not become ill from their exposure. People who become ill from asbestos are usually those who are exposed to it on a regular basis, most often in a job where they work directly with the material or through substantial environmental contact.

Since the early 1940s, millions of American workers have been exposed to asbestos. Health hazards from asbestos fibers 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 fibers. 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 individuals with only brief exposures. Generally, those who develop asbestos-related diseases show no signs of illness for a long time after their first exposure. It can take from 10 to 40 years for symptoms of an asbestos-related condition to appear.

There is some evidence that family members of workers heavily exposed to asbestos face an increased risk of developing mesothelioma. This risk is thought to result from exposure to asbestos fibers brought into the home on the shoes, clothing, skin, and hair of workers. This type of exposure is called paraoccupational exposure. To decrease these exposures, people exposed to asbestos at work are required to shower and change their clothing before leaving the workplace.

5. How great is the risk?

Not all workers exposed to asbestos will develop diseases related to their exposure. 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. Asbestos that is bonded into finished products such as walls and tiles 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 fibers are set free and inhaled, however, exposed individuals are at risk of developing an asbestos-related disease.

In addition, different types of asbestos fibers may be associated with different health risks. For example, results of several studies suggest that amphibole forms of asbestos may be more harmful than chrysotile, particularly for mesothelioma. Even so, no fiber type can be considered harmless, and people working with asbestos should always take proper safety precautions to limit exposure.

6. How does smoking affect risk?

Many studies have shown that the combination of smoking and asbestos exposure is particularly hazardous. Smokers who are also exposed to asbestos have a *greatly* increased risk of lung cancer. However, smoking combined with asbestos exposure does not appear to increase the risk of mesothelioma.

There is evidence that quitting smoking will reduce the risk of lung cancer among asbestos-exposed workers. 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 fibers on the job or at home via a family contact should inform their physician of their exposure history and any symptoms. Asbestos fibers can be measured in urine, feces, mucus, or material rinsed out of the lungs. A thorough physical examination, including a chest x-ray and lung function tests, may be recommended. It is important to note that chest x-rays cannot detect asbestos fibers in the lungs, but they can help identify any lung changes resulting from asbestos exposure. 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. 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 maritime, construction, manufacturing, and service workplaces. The Mine Safety and Health Administration (MSHA) enforces regulations related to mine safety. Workers should use all protective equipment provided by their employers and follow recommended work practices and safety procedures. For example, National Institute of Occupational Safety and Health (NIOSH)-approved respirators that fit properly should be worn by workers when required.

Workers who are concerned about asbestos exposure in the workplace should discuss the situation with other employees, their employee health and safety representative, and their employers. If necessary, OSHA can provide more information or make an inspection. Regional offices of OSHA are listed in the “United States Government” section of telephone directories’ blue pages (under “Department of Labor”). Regional offices can

also be located at <http://www.osha-slc.gov/html/RAmap.html> on the Internet, or by contacting OSHA's national office at:

Organization: **Office of Public Affairs**
 Occupational Safety and Health Administration
 U.S. Department of Labor

Address: Room N-3647
 200 Constitution Avenue, NW.
 Washington, DC 20210

Telephone: 202-693-1999
 1-800-321-6742 (1-800-321-OSHA)

TTY (for deaf or hard
of hearing callers): 1-877-889-5627

Internet Web site: <http://www.osha.gov/as/opa/worker/index.html> (Worker's Page)

Mine workers may contact:

Organization: **Office of Information and Public Affairs**
 Mine Safety and Health Administration (MSHA)
 U.S. Department of Labor

Address: 23rd Floor
 1100 Wilson Boulevard
 Arlington, VA 22209-3939

Telephone: 202-693-9400

Internet Web site: <http://www.msha.gov>

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 exposure control recommendations. In addition, NIOSH distributes publications on the health effects of asbestos exposure and can suggest additional sources of information. NIOSH can be contacted at:

Organization: **Information Resources Branch**
 National Institute for Occupational Safety and Health
 (NIOSH)

Address: Robert A. Taft Laboratories
 Mailstop C-18
 4676 Columbia Parkway
 Cincinnati, OH 45226-1998

Telephone: 1-800-356-4674 (1-800-35-NIOSH)

E-mail: pubstaft@cdc.gov

Internet Web site: <http://www.cdc.gov/niosh>

9. Will the Government provide examinations and treatment for asbestos-related conditions? What about insurance coverage?

Medical services related to asbestos exposure are available through the Government for certain groups of eligible individuals. In general, individuals must pay for their own medical services unless they are covered by private or Government health insurance. Some people with symptoms of asbestos-related illness may be eligible for Medicare coverage. Information about benefits is available from the Medicare office serving each state. For the telephone number of the nearest office, call toll-free 1-800-633-4227 (1-800-MEDICARE) or visit <http://www.medicare.gov> on the Internet.

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 their state. Contact information for the workers' compensation program in each state may be found in the blue pages of a local telephone directory or at <http://www.dol.gov/esa/regs/compliance/owcp/wc.htm> on the Internet.

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 Program. 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 and how to file a claim is available from:

Organization:	Office of Worker's Compensation Programs Employment Standards Administration U.S. Department of Labor
Address:	Room S-3229 200 Constitution Avenue, NW. Washington, DC 20210
Telephone:	202-693-0040
E-mail:	OWCP-Mail@dol-esa.gov
Internet Web site:	http://www.dol.gov/esa/owcp_org.htm

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

Eligible veterans and their dependents may receive health care at a Department of Veterans Affairs (VA) Medical Center. Treatment for service-connected and nonservice-connected conditions is provided. If the VA cannot provide the necessary medical care, they will arrange for enrolled veterans to receive care in their community. Information about eligibility and benefits is available from the VA Health Benefits Service Center at 1-877-222-8387 (1-877-222-VETS) or on the VA Web site at http://www.va.gov/health_benefits/ on the Internet.

10. Is there a danger of nonoccupational exposure from the environment and products contaminated with asbestos fibers?

Asbestos is so widely used that the entire population has been exposed to some degree. Air, drinking water, 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. Disease is unlikely to result from a single, high-level exposure, or from a short period of exposure to lower levels of asbestos.

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

The organizations listed below can provide more information about asbestos exposure.

The **Agency for Toxic Substances and Disease Registry (ATSDR)** is responsible for preventing exposure, adverse human health effects, and diminished quality of life associated with exposure to hazardous substances from waste sites, unplanned releases, and other sources of pollution present in the environment. The ATSDR provides information about asbestos and where to find occupational and environmental health clinics. The ATSDR Information Center can be reached at:

Organization:	Agency for Toxic Substances and Disease Registry Division of Toxicology
Address:	Mailstop E-29 1600 Clifton Road, NE. Atlanta, GA 30333
Telephone:	404-498-0160 1-888-422-8737 (1-888-42-ATSDR)
E-mail:	ATSDRIC@cdc.gov
Internet Web site:	http://www.atsdr.cdc.gov

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 Information Service, or TSCA Hotline, 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 EPA's Asbestos and Vermiculite Home Page has suggestions for homeowners who suspect asbestos in their homes, lists laws and regulations applicable to asbestos, and links to the Agency's findings on asbestos exposure at the World Trade Center and the Pentagon. Questions may be directed to:

Organization: TSCA Assistance Information Service
U.S. Environmental Protection Agency
Address: Mailcode 74080
401 M Street, SW.
Washington, DC 20460
Telephone: 202-554-1404
TDD: 202-554-0551
E-mail: tsca-hotline@epa.gov
Internet Web site: <http://www.epa.gov/asbestos/>

The **U.S. 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:

Organization: Office of Information and Public Affairs
U.S. Consumer Product Safety Commission
Address: 4330 East-West Highway
Bethesda, MD 20814-4408
Telephone: 1-800-638-2772
TTY (for deaf or hard
of hearing callers): 1-800-638-8270
E-mail: info@cpsc.gov
Internet Web site: <http://www.cpsc.gov>

Information about asbestos is also available from the U.S. Department of Health and Human Services Web site at <http://www.hhs.gov/news/press/2001pres/20010916a.html> on the Internet. In addition, people can contact their local community or state health or environmental quality department with questions or concerns about asbestos.

Materials about cancer and how to quit smoking are available by calling the Cancer Information Service (CIS) (see below).

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Sources of National Cancer Institute Information

Cancer Information Service

Toll-free: 1-800-4-CANCER (1-800-422-6237)

TTY (for deaf and hard of hearing callers): 1-800-332-8615

NCI Online

Internet

Use <http://cancer.gov> to reach the NCI's Web site.

LiveHelp

Cancer Information Specialists offer online assistance through the *LiveHelp* link on the NCI's Web site.

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