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*Selikoff Centers for
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Asbestos Health Facts

What is asbestos?

The term *asbestos* is used to describe a group of mineral fibers that were used to insulate against heat and flames. Up until the late 1970s, asbestos was used widely in building materials and other products. Common uses included pipe and boiler insulation, fireproofing on ceilings and beams, acoustical plaster, and ceiling and floor tiles. Because of the health problems it causes, asbestos is no longer used in new construction, but remains in many buildings built before the 1980s. Asbestos-containing materials (ACM) are dangerous when the asbestos fibers are released into the air and inhaled. Friable ACM (asbestos that may be crumbling or flaking off of surfaces) is the greatest health risk because fibers are easily released into the air. Spray-on asbestos insulation on structural beams and ceilings, and troweled-on acoustical insulation are examples of friable asbestos. Hard ACM, such as vinyl floor tile, is not usually dangerous unless it is sanded, cut, or disturbed in a manner that releases asbestos fibers.

How does asbestos affect my health?

Several diseases can occur as a result of asbestos exposure. These diseases include pleural scarring (scarring of the lining of the lung or the chest wall), asbestosis (scarring of the lung tissue), lung cancer, digestive tract cancer, and mesothelioma (cancer of the lining of the lung or abdominal cavity).

- **Pleural scarring:** The pleura is the thin lining that surrounds the lung and covers the inside of the chest cavity. Inhaled asbestos fibers travel from the lung to this lining membrane and cause scar tissue to form. When the scar tissue becomes thick enough, it becomes visible on chest x-rays as a “plaque.” Pleural plaques are also known as pleural fibrosis, pleural thickening, and pleural asbestosis. The majority of persons with heavy or long-term exposure to asbestos develop pleural abnormalities. Most plaques do not cause significant breathing difficulties or disability. They also are a sign that significant exposure has occurred and that other asbestos-related diseases may develop. Very extensive areas of pleural scarring can result in significant loss of lung function.
- **Asbestosis (Paranchymal asbestosis, pulmonary asbestosis):** Parenchymal asbestosis is scar formation inside the lung tissue which results from the presence of asbestos fibers in the lung. This scarring can interfere with lung function because it blocks the uptake of oxygen from the air in the lungs into the bloodstream and reduces the amount of oxygenated blood that travels back to the heart and the body’s tissues. The presence of scar tissue in the lung can also stiffen the lung and make it difficult to expand with a deep breath. Some persons with mild scarring experience little loss of exercise capacity. Others with more extensive disease can become out of breath with only mild exertion. As a general rule, the greater the exposure, the more severe the scarring. Although workers can vary in their tendency to form scarring once they are exposed to asbestos and vary in how much their tolerance for physical effort is affected by the scarring in their lung tissue. Asbestos-related scar formation is irreversible. Scarring may slowly progress even after asbestos exposure ceases, since some asbestos fibers remain in the lung even though exposure from the outside stops.
- **Lung cancer and respiratory cancers:** Lung cancer is a serious risk for asbestos-exposed workers, particularly for those who have smoked cigarettes. Cigarettes and asbestos act together to markedly increase the risk of cancer. For example, nonsmoking insulators (a heavily exposed group) who worked in the trade for at least 20 years, have a lung cancer risk five times that of nonsmoking workers who were not exposed to asbestos. However, asbestos insulators who smoked can have a 50 to 90 times the increase in risk. Workers can help to reduce this enormous hazard, however. Evidence shows that if an insulator has quit smoking, over 15 years his risk of developing lung cancer decreases to very close to the risk of the never-smoker. Since the effects of asbestos cannot be reversed once workers have been exposed, one of the most important things workers who have been exposed to asbestos can do to help improve their health is to quit smoking. The risk of cancer of the larynx (voice box) is also increased by asbestos exposure. There is reason to believe that cigarette smoking and asbestos exposure together also markedly raise this risk.



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- Colon cancer and other gastrointestinal cancers: Asbestos workers have a higher incidence of cancers of the gastrointestinal tract, including the mouth and throat, esophagus, stomach, and colon/rectum. People exposed to asbestos for more than 20 years have twice the risk of developing colon cancer. It is important for all asbestos-exposed workers to have regular examinations to check for early signs of digestive tract cancer.
 - Mesothelioma: Persons exposed to asbestos may develop mesothelioma, a rare cancer of the pleura (the lining of the lung) and the peritoneum (the lining of the abdominal cavity). The time that these take to develop (the latency period) is very long and many of the symptoms are common to other respiratory diseases, which can lead to misdiagnosis. The great majority of cases of mesothelioma can be traced to prior exposure to asbestos dust. The prognosis for mesothelioma depends on how early the disease is diagnosed and how soon treatment can begin.

How long does it take for scarring to develop?

Scarring of the lung related to asbestos exposure has a long incubation period, also called the “latency” period. It usually takes 15–25 years after asbestos exposure began before the scarring can be seen on an x-ray, or before breathing tests will show evidence of the disease. Early scarring can be seen in lung tissue under the microscope within months of first exposure. People vary in their reactions to asbestos inhaled into the lung. While it is not possible to predict who is more susceptible, it is clear that the more the exposure, the greater the risk of scarring, lung disease and of asbestos-related cancers. As a result, all workers should be protected against exposure to asbestos dust.

What are the symptoms of asbestos scarring?

The main symptom of asbestos-related scarring is shortness of breath, especially during physical exertion, such as climbing stairs or carrying loads. Some individuals develop a dry cough (smokers may have a cough that produces phlegm), and some experience an aching chest pain, usually in the lower part of the chest. But some individuals with scarring have no symptoms at all. A small percentage of individuals with asbestosis or pleural thickening become significantly disabled by asbestos-related scarring.

How is scarring detected?

The standard chest x-ray is the principle method of detecting asbestosis and pleural scarring, and is still used in the great majority of screening programs. More recently, CT scanning of the chest, including low radiation dose CT scanning, has been shown to be a more sensitive technique and will show evidence of scarring in the lung and pleura when the standard chest x-ray appears normal. Evidence suggests that lung cancer may be detected much earlier with the CT scan, particularly in those who were also heavy smokers. This is important because treatment is likely to be more successful with early detection. At present, CT scans are not routinely used for screening, but may be useful in diagnosis for workers with heavy asbestos exposure and smoking histories.

What about cigarette smoking?

Cigarette smoking is known to worsen the effects of asbestos on the lung. If workers who have been exposed to asbestos also smoke, they are more likely to develop scarring and have more difficulty breathing. It is very important that these workers stop smoking. Many asbestos-related cancers occur much more frequently among individuals who have smoked. Stopping smoking results in improved exercise tolerance, and the risk of cancer begins to decrease as soon as people quit smoking.

What should my doctor look for?

The physician will take a careful exposure history and should find out from you how asbestos was used or disturbed on various jobs. This history should be updated at each examination. The doctor will ask about symptoms that could indicate asbestosis, pleural scarring, and cancers of the respiratory tract and the digestive tract. A comprehensive physical examination is also usually performed. The exam should include a chest x-ray or CT scan and pulmonary function tests (breathing tests). A test for blood in the stool is frequently part of the exam, as are blood and urine tests. Of course, if symptoms develop between these periodic examinations, a physician should be consulted without delay.

Are there special medical recommendations for asbestos-exposed workers?

It is recommended that asbestos-exposed workers be screened at least annually by a physician with expertise in the evaluation and management of asbestos-related lung diseases, especially after 10 years have passed since the worker’s first asbestos exposure. For current or former smokers, examination every six months may be advisable. People with asbestosis are at increased risk for lung infections and recover more slowly. They should get regular medical care, be treated promptly for respiratory infections and other breathing problems, and receive influenza and pneumonia vaccines after consultation with their physicians. Your doctor may recommend an annual flu vaccination and a pneumonia vaccination every seven years. For most asbestos-exposed workers, an exercise program and careful attention to weight control can be helpful in maintaining exercise tolerance, even in the face of mild or moderate asbestos-related scarring. And, of course, the prevention of further exposure to asbestos dust is of great importance. Employers and contractors should use all available methods to control asbestos dust exposure at the worksite, which may include respirator use, sealing off work areas, and filtering dust from the air where asbestos is being removed or remediated.

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