

Asbestos

Asbestos - Health Effects

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What are the health effects of asbestos?

The human health effects from long-term unsafe asbestos exposure are well documented. Asbestos fibres are easily inhaled and carried into the lower regions of the lung where they can cause fibrotic lung disease (asbestosis) and changes in the lining of the chest cavity (pleura). These diseases can lead to reduced respiratory function and death. Long-term inhalation of asbestos fibres also increases the risk of lung cancer and mesothelioma.

Enlargement of the heart can also occur as an indirect effect from the increased resistance of blood flow through the lungs.

People are more likely to experience asbestos-related disorders if they:

- are exposed to high concentrations of asbestos,
- are exposed for longer periods of time, and/or
- are exposed to asbestos more frequently.

What is covered in this document?

This document is part of a series of documents on asbestos:

- [Asbestos - What is...](#)
- **Asbestos - Health Effects**

- [Asbestos - Control Strategies for Workplaces](#)

- [Asbestos - In the Home](#)

What is asbestosis?

Asbestosis is a chronic lung disease in which there is scar-like tissue formed in the lungs (pulmonary fibrosis). This fibrosis decreases the elasticity of the lungs, making breathing more difficult. Shortness of breath is the most common symptom. In most cases, a common physical sign is "crackles" - sounds that can be heard through a stethoscope. Also known as "rales", they are usually detected near the end of a full inspiration.

When diagnosing asbestosis, chest x-rays will show small irregular opacities (spots in x-ray film where the x-rays could not "see" through the tissue). These are commonly found in the middle and lower lungs. Lung function tests can help to determine how serious the condition is. People with fully developed asbestosis have shortness of breath, cough, chest pain, reduced lung function, finger clubbing, and bluish skin colouration.

Development of asbestosis usually requires several years of exposure to asbestos fibres. The development and progression of asbestosis varies from individual to individual. It is often slow with little changes over five, ten or more years. Many cases do not advance after diagnosis. It may, however, be quicker in some individuals than in others due to different conditions of past dust exposure.

What is the risk of lung cancer from working with asbestos?

The risk of getting lung cancer after asbestos exposure depends on a number of factors, the most important of which are:

- the level (how much) and the duration (length) of exposure
- the time since exposure occurred
- the age at which exposure occurred
- the tobacco-smoking history of the exposed person, and
- the type and size of the asbestos fibres.

The average time from exposure to cancer development (latency period) is 20 to 30 years. Although lung cancer is generally associated with long-term exposures to asbestos, there are also studies which show that workers with 1 to 12 months of exposure had an increased risk in developing lung cancer a number of years later.

Lung cancer has also been reported in household contacts and family members of asbestos workers, presumably from exposure to asbestos carried home on work clothes.

Lung cancer usually does not cause symptoms in the early stages. When symptoms occur the cancer is often advanced. Symptoms of lung cancer include chronic cough, weight loss, shortness of breath, fever, and chest pain. These symptoms are also common with other lung disorders, therefore to confirm the diagnosis it is necessary to carry out laboratory tests including chest x-rays.

What is mesothelioma?

Mesotheliomas are relatively rare in the general population, but are often observed in asbestos workers and sometimes in family/household members. Case-control studies have found strong associations between occupational exposure to asbestos fibres and the development of mesothelioma.

Malignant mesothelioma is an aggressive, usually fatal cancer arising from the mesothelial cells that form the lining of the pleural (lung), peritoneal (abdominal) and pericardial (heart) cavities. For mesothelioma, the latency is generally 30-40 years, with the longer periods seen where there had been lower levels of asbestos exposure. Workers with a heavy exposure probably swallow asbestos fibres (when fibres are cleared from the airways in mucus and then swallowed), which may contribute to the development of mesothelioma of the lining of the abdominal cavity (peritoneum).

Mesothelioma has also been reported in household contacts and family members of asbestos workers, presumably from exposure to asbestos carried home on work clothes.

Similar to lung cancer, several studies have indicated that the risk of mesothelioma after asbestos exposure depends on the time since exposure (latency), with the risk increasing exponentially with time after about 10 years. Early studies indicated that diagnosis with mesothelioma was fatal within a short period of time (often within months), however other studies indicate that survival time after diagnosis may be influenced by exposure intensity (amount). Some scientists believe that early identification and intervention of mesothelioma may increase survival. In contrast to the situation for lung cancer, the effect of asbestos on mesothelioma risk does not appear to be increased by smoking.

Patients with pleural mesothelioma experience chest and shoulder pain and dry cough is frequent. As the cancer progresses and the tumor grows bigger, weight loss, weakness, and fever may also occur.

What are other health effects from asbestos?

Pleural Effects

Inhalation of asbestos fibres can also lead to four types of non-cancerous abnormalities in the lining of the chest cavity (pleura). These are:

- localized deposits of collagen (pleural plaques);
- fluid in the pleural space (pleural effusion);
- diffuse thickening and fibrosis of the pleura; and
- folded lung or rounded atelectasis (a condition which occurs when an area of pleural fibrosis rolls into the lung making a portion of the lung airless).

These pleural abnormalities are found in 10-60% of asbestos workers. Pleural abnormalities are also common in family members of asbestos workers, presumably from exposure to asbestos carried home on work clothes.

In many cases, the development of pleural plaques is not seen for 20 to 30 years after exposure. Pleural effusions (excess fluid between the two membranes that envelop the lungs) usually occur within 10 years after exposure.

Laryngeal Effects

Asbestos exposure has also been found to significantly increase the incidence of laryngitis in a small number of studies.

Immune System Effects

There have been several studies on the effects of asbestos exposure on the immune system. Most studies indicate that immune system function is reduced in workers with asbestosis. It has not been determined if the changes in immune function are the cause or the result of the asbestosis. In workers exposed to asbestos but who have not developed clinical signs of asbestosis, a depressed immune function is mild or no change has been noted.

Asbestos exposure may be a causal factor in the development of a rare condition known as retroperitoneal fibrosis. This condition is the development of a fibrous mass behind the membrane lining the abdominal cavity, which can result in kidney failure. There is a case control study and there are a number of case reports which indicate that asbestos exposure may be an important risk factor for retroperitoneal fibrosis.

What occupations could be exposed to asbestos?

According to the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) and the U.S. Occupational Safety and Health Administration (OSHA), asbestos exposure is a concern for the following workplaces and processes:

- Mining of asbestos occurring from natural mineral deposits
 - Processing of asbestos minerals (millers)
 - Manufacture of asbestos-containing products
 - Construction industry - disturbing asbestos-containing materials during building renovations or demolitions
 - Mechanics - vehicle brake and clutch repairs
 - Marinas - renovating or demolishing ships constructed with asbestos-containing materials
 - Insulation workers and heating trades
 - Sheet metal workers, plumbers and pipe fitters
 - Workers responsible for disposing of asbestos waste, and waste workers
 - Cement workers
 - Custodial workers - contact with deteriorating asbestos-containing materials in buildings
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