



Maritime shipping industry conference

Asbestos on board - what to do?

Asbestos from the perspective of occupational health

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1. Exposure

Because of its good technical properties, asbestos has been processed since ancient times. The use of asbestos in Germany reached its peak in the 1970s.

2. Risk

Inhaled asbestos fibres can travel as far as to the pulmonary alveoli. There they can enter the interstitial tissue of the pulmonary alveoli. Because of their needle-like shape, the fibres in the tissue can penetrate all the way to the pleura and cause pleural plaques (a thickening of the tissue around the lungs) there. Asbestos fibres cause chronic inflammatory processes within the lung tissue, leading to restructuring and scarring of the connective lung tissue, which tends to shrink. The person affected suffers from symptoms of chronic bronchitis with a dry cough and shortness of breath. This chronic alteration of the tissue also continues after the exposure to asbestos ends.

The first indication of the causal connection between the exposure to asbestos dust and a terminal stiffening of the lung tissue, so-called asbestosis, was discovered in Great Britain in 1900. The first description in German of a fatal alteration of the lung tissue based on the effect of asbestos fibres dates back to 1907. This disease has been acknowledged as an occupational disease in Germany since 1936: asbestosis or pleural disease caused by asbestos dust (occupational disease no. 4103).

Asbestos fibres have significant cancer-forming properties. They stimulate cell growth, create breaks in the cell chromosomes, disrupt cell division and in doing so, can cause tumours. Asbestos fibres cannot only enter the abdominal cavity by being inhaled but also through spreading by the digestive tract.

The first reports of lung cancer caused by exposure to asbestos dust are from the 1930s. In the setting of an experimental animal model, the correlation between asbestos exposure and tumour development was demonstrated by German physicians in the late 1930s and early 1940s.

Compared to the normal population, those working with asbestos and in insulation had a higher risk of getting lung cancer by a factor of five. Those who fell ill complained, for instance, of an unsuccessfully treated dry cough, coughing up blood and pneumonia with delayed healing tendency.

Mesothelioma, a malignant new tissue formation, does not occur until an average period of latency of 20 – 40 years; independent of the duration of the exposure to asbestos. It emanates from specific top layer of cells on the pleura, peritoneum or pericardium. The course of the disease is often initially symptom-free. Usually recurring pleural effusions occur first, later also chest pain, shortness of breath and a cough. The prognosis is not good. The average survival time is six to twelve months.





In the case of already existing pleural plaques, the risk of getting terminal lung cancer is increased threefold. The risk of getting mesothelioma is approximately increased by two.

In 1977 the list of occupational diseases was expanded to include asbestos-related lung and laryngeal cancer in connection with asbestosis (occupational disease no. 4104) and pleural, peritoneal or pericardial mesothelioma (occupational disease no. 4105). In 2009 occupational disease no. 4114 was also added to the list: lung cancer caused by the interaction of asbestos dust fibres and polycyclic aromatic hydrocarbons. Ovarian cancer was not allocated to occupational disease no. 4104 until 2017.

Despite the ban on the use of asbestos in 1993 in Germany, diseases caused by asbestos fibre dust still occur frequently as a result of its period of latency.

3. The medical occupational health and safety measures

It was not until 1940, with the introduction of the German Social Accident Insurer's guidelines for the control of the dust hazard in companies processing asbestos, that protection against asbestos fibres targeted technical measures. The basic principle of these guidelines was to prevent dust in work spaces, e.g. by means of aspiration.

Admittedly, the human respiratory tract is capable of releasing inhaled asbestos fibres again. However, due to their shape and their tendency to fracture along their longitudinal axis, asbestos fibres also remain in the respiratory organs permanently. There, they lead to alterations in the tissues. In part, these alterations cannot be diagnosed until many years or decades after exposure to asbestos ends or they do not lead to discomfort until then (see above).

The objectives of the occupational medical measures are:

- to advise business operators regarding risk assessment and the selection of suitable technical and organizational protective measures, e.g. selection of personal protective equipment
- to advise employees exposed to asbestos at work, e.g. regarding individual risks and protective measures
- to diagnose at the earliest possible opportunity ventilation problems in the lungs or growth of lung or laryngeal tumours in employees exposed to asbestos
- to recognize possible secondary diseases early and to initiate appropriate therapeutic measures and
- to gain new knowledge for the improvement of diagnostics and therapy for diseases caused by asbestos.

If a company has workstations exposed to asbestos, the legislative authorities define this as "particularly hazardous work". In these cases, the Ordinance on Preventive Occupational Health Care (ArbMedVV) requires that the business operators, among other things, initiate mandatory preventive occupational medical examinations for those insured. If the obligatory mandatory preventive occupational medical examinations have not taken place, the person cannot carry out the work at a workstation exposed to asbestos.

The mandatory preventive occupational medical examinations must be initiated:

- within three months before beginning the work
- the second examination twelve months after beginning the work at the latest
- each additional examination 36 months after the last examination at the latest.

After the exposure to asbestos ends, the insured persons are entitled to routine "follow-up examinations". These must be routinely initiated by the business operator during continuous employment. After leaving the company or retiring, the Gesundheitsvorsorge (Healthcare) Augsburg assumes this task as the central service facility for the insurers of the German Social Accident Insurance.