

PNEUMOCONIOSIS RESEARCH UNIT

Visit by Medical and Science Correspondents
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ASBESTOS AND CANCER

It is now accepted that there is an association between exposure to asbestos dust and the development of certain cancers. These are cancers of the lung and mesotheliomas of the pleura and peritoneum. There is evidence that there is an increased incidence of cancers of the gastro-intestinal tract; this has been produced by German and American investigators. The cancers of the lung occur in workers with severe asbestosis - fibrosis of the lung due to asbestos dust. In contrast to this the mesotheliomas can occur in people with minimal fibrosis and, in some cases, asbestos is found in the lungs but insufficient to cause any scarring of the lung tissue. In these people the exposure to asbestos dust is relatively slight, and may be as little as three months. In some cases, the exposure has been environmental, not occupational. The time between the exposure and the development of the tumour is usually more than thirty years. These diseases are due to the inhalation of asbestos dust. There is no known danger through drinking water from asbestos pipes, or beer that has passed through asbestos filters.

Asbestos is a generic term applied to a number of fibrous silicates. Four types of this material are, and have been, used commercially in Britain. These are chrysotile, crocidolite, amosite and anthophyllite. Chrysotile is by far the commonest type, the total world annual production being more than 3,000,000 tons; the main sources are the Soviet Union, Canada, South Africa, and Cyprus. Crocidolite (blue asbestos) is mined in South Africa and until recently in Western Australia - the annual production is about 150,000 tons; the amount imported into Britain has been reduced in recent years, and is now 7,500 tons. Amosite is found only in South Africa where 100,000 tons are produced annually, the use of this fibre is increasing in Britain and about 30,000 tons was brought in last year. Anthophyllite is mainly produced from a small mine in Finland, with an annual production of 15,000 tons; only a small amount of this is used in Britain. About 500 cases of cancer of the lung and mesothelioma are known to have occurred among people exposed to asbestos dust in the United Kingdom. This is hardly significant when one realises that more than 25,000 cases of carcinoma of the lung are diagnosed each year.

On current evidence from South Africa, Australia and Britain, it would appear that crocidolite is mainly implicated in the development of the mesotheliomas. However, cases have occurred in the United States, Canada and a few in Britain in which the people concerned appear to have only been exposed to chrysotile. The major problem at the moment is to establish whether only one type of asbestos is responsible for the development of these tumours, and if other varieties can be exonerated. Exposure to only one type of asbestos is unusual in a manufacturing country such as Britain, therefore to find populations exposed to a single type of asbestos, surveys have to be undertaken in the mining areas. It is also hoped that information obtained from animal experiments may be valuable in the assessment of this hazard.

Members of the staff of this Unit have played a prominent part in the discovery and investigation of the association between mesotheliomas and exposure to asbestos dust. They were concerned in the original definition of the condition in South Africa, its recognition in Britain, and the development of the international research programme which is now in operation.

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so far been established between mesothelioma and amosite, the type of asbestos used most widely in the insulation side of the industry. The disease is very rare, there being only 500-600 cases on record in the world, compared with over 20,000 cases of lung cancer in Britain alone every year. Records at the London Hospital show that only 83 patients have died of mesothelioma over a period of almost 50 years. About half the cases had had some contact with asbestos, in a further number contact was not certain, and about a quarter had had no contact at all. Furthermore, the hospital in question serves an area which includes a large asbestos factory as well as the London Docks, so it is certain that a very large number of people have been exposed to some degree.

So much for the facts. It now remains to consider those processes involving the handling of asbestos and asbestos products where a hazard might exist and, if possible, to assess the extent of the hazard with a view to taking adequate preventive measures. In assessing any process, two main considerations must be taken into account - the extent to which the process generates airborne dust and whether it is an occasional or a regular operation. For instance, processes covered by the present Regulations only come within the orbit of these Regulations if they involve the employment of any one person for more than eight hours per week. This is a very arbitrary boundary, however, and a better principle to adopt for dusty operations would be to protect the operator where the work is occasional and control the operation where the work is continuous. The method to be adopted for occasional work would be the wearing of an approved respirator by the worker coupled with careful handling of the material; for continuous work, engineered control such as ventilation or damping with the required degree of enclosure is recommended. *Well said!*

Examples of processes which are liable to generate significant amounts of dust are the handling of loose asbestos fibre, the sawing or machining of asbestos mill-board and asbestos reinforced plastics, or the drawing of asbestos yarn through apertures at high speed. The handling of asbestos cloth can also lead to the emission of dust in certain circumstances. The simplest method of controlling the operation is to apply damping where possible, otherwise ventilation and/or enclosure may be necessary. Cloth may be specially processed to reduce dust on handling. Simple operations such as the fitting of dry asbestos packings in pump glands and the cutting of sheet jointing materials containing asbestos are not considered hazardous, nor is the wearing of asbestos clothing.

To sum up, asbestosis with or without lung cancer is not likely to occur except in conditions involving lengthy exposure to fairly high dust concentrations. The controls applied in the manufacturing side of the industry have demonstrated that the disease can be minimised and possibly eliminated by limiting airborne dust to a reasonable level. It follows that most uses of asbestos products and many operations upon process materials are free of risk in this respect, while those evolving substantial amounts of dust can fairly readily be made safe by established methods of damping, ventilation or enclosure. The exact measures to be taken will vary with the circumstances and the Asbestosis Research Council is at present working on a Code of Practice which is being made as comprehensive as possible. In the meantime, every effort will be made to deal with individual problems as they arise. Finally, whatever the connection between mesothelioma and asbestos exposure in general, any association between this extremely rare disease and white asbestos, which has been widely used throughout the world for many years, is still very indefinite.

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