

PNEUMOCONIOSIS DUE TO GRAPHITE AND SOOT

105

Manufacture of artificial graphite

Artificial graphite is prepared by crushing, grinding and calcining of gas and oil cokes, and is used in the manufacture of shaped carbon blocks and electrodes for use in electric furnaces in the production of aluminium metal. This material is a very pure form of carbon, and the silica content seldom exceeds 1 per cent of the total weight. It has been proved, and accepted for purposes of industrial disablement benefit, that labourers employed in the milling operations suffer from pneumoconiosis similar to that found among workers in natural graphite.

In Great Britain, soot, lamp-black or "nearly pure carbon" is manufactured commercially by the incomplete combustion of gas and tar oils and petroleum distillates. Mineral impurity constitutes only a trace. The chief use of this product is as a reinforcing filler in rubber-compounding. In addition to producing rigidity in the vulcanized rubber, the carbon increases the tensile strength and the resistance to abrasion.

No definite evidence of pneumoconiosis, in either the lamp-black or the rubber industry, has so far been recorded in Great Britain, but Brauss and Gärtner (1951) have recorded the occurrence of cases in Germany.

A similar product—gas-black—is manufactured in America by burning natural gas, which is 95 per cent methane. This work, it is reported, does not cause any pulmonary disease.

Recently the writer has observed a few cases of simple pneumoconiosis among a group of workmen in the north of England who were engaged for many years (30 to 50) in the manufacture of soot (no silica impurity).

Cause of coal and graphite pneumoconiosis

These observations are important in relation to the aetiology of pneumoconiosis of coal-workers. The problem is whether these cases of pneumoconiosis are due to the small amount of silica within the coal or graphite or are due to the carbon itself. That there is no simple answer to this question will be realized, if one recalls that the pathological changes in the lungs may be determined, not only by the quality of the dust, chemical and physical, but also by mere quantity of fine particles, while both factors may be further influenced by associated infection.

ASBESTOSIS

Asbestos, meaning unconsumable, is a collective term applied to a group of silicate materials, which, while differing widely in chemical composition, resemble each other in certain valuable physical properties. They are finely fibrous in structure, and so can be split readily to microscopic size without loss of identity. Single fibres have been noted up to 43 inches and down to 0.000003 inch in length. The fibrous structure, which, in varying degree, is associated with flexibility, enables it to be spun into yarn and then woven