

its presence in pads used for filtration (Biles & Emerson, *Nature, Lond.* 1968, 219, 93). One pint of beer yields about 5000 asbestos fibres but their size is such that all 5000 laid end to end are estimated to measure less than 0.1 in. No doubt other environmental sources have yet to be discovered, but the important question to be answered is what level of exposure constitutes a hazard. Some headway has been made in resolving this problem. Asbestos particles deposit themselves in the lungs and after a process of phagocytosis are transformed into asbestos bodies. These bodies are to be found both in workers occupationally exposed to asbestos and in people living in urban regions. In 100 consecutive hospital autopsies of people living near Glasgow, 23 of the cases exhibited asbestos bodies but, surprisingly, none were found in any of the 38 women examined (Roberts, *J. clin. Path.* 1967, 20, 570). Across the Atlantic in Montreal, a different situation was observed in a similar random group. At autopsy, 32 men (57%) and 16 women (34%) showing asbestos bodies (Anjilvel & Thurlb., *Can. med. Ass. J.* 1966, 95, 1179). Neither study pointed to an association between the occurrence of asbestos bodies and malignancy but a higher prevalence of asbestos bodies is usually found in cases of mesothelioma.

The formation of asbestos bodies is part of the process leading to the development of asbestosis. Whether lung cancer is a complication of asbestosis or is produced in the absence of this condition, thus being a hazard in its own right, has still to be decided. In 68 workers with asbestosis, 13 presented lung cancer (Lieben, *Archs envir. Hlth* 1966, 13, 619). Borner *et al.* (*J. Am. med. Ass.* 1967, 201, 587) consider that the increase in the incidence of mesothelioma and asbestosis is a reflection of the diversification in asbestos usage and report that of 17 cases of mesothelioma examined, two had no history of occupational exposure. Lieben & Pistawka (*Archs envir. Hlth* 1967, 14, 559) documented 42 cases of mesothelioma. Occupational exposure accounted for ten of these, environmental exposure in the vicinity of an asbestos plant for eight and home contact with asbestos workers for three. Of the rest, significant exposure was questionable but probable in ten cases, but no history of exposure could be obtained in 11 cases. The UK Advisory Panel (*loc. cit.*) claims that in its experience and despite tentative evidence to the contrary, there has been no excess of lung cancer among asbestos workers in the absence of demonstrable asbestosis. Prospective studies are needed to ensure that the hazard of excess bronchial cancer has been removed by recent improvements in factory conditions.

Based on a study of mortality data covering a 16.5-yr period on over 21,000 asbestos workers and over 6000 workers not exposed to asbestos, Enterline & Kendrick (*Archs envir. Hlth* 1967, 15, 181) found that the increased mortality rate (21% above normal) in heavily exposed workers was due partly to cancer of the respiratory system. Less heavily exposed workers showed a slightly raised death rate from respiratory cancer and a high death rate from asbestosis. In another mortality study by Kleinfeld *et al.* (*ibid.* 1967, 15, 177) on 46 asbestos-insulator workers, the incidence of lung cancer was nine times that among average US citizens. Although both these studies showed an increased incidence of cancer of the gastro-intestinal tract among asbestos workers, the UK Advisory Panel (*loc. cit.*) is sceptical about such claims. Graham & Graham (*Envir. Res.* 1967, 1, 115) suggest that asbestos may be an aetiological factor in ovarian cancer. Asbestos-induced changes in the guinea-pig and rabbit ovary were histologically similar to those occurring in the early stages of human ovarian cancer. On the available evidence, however, only the lungs can be named as a confirmed site of malignancy.

Asbestos workers are obviously advised to undergo routine medical examinations. Any improvement in the prognosis of asbestosis must depend on its early diagnosis so that no