

ASBESTOS AND HEALTH, 1971

THE industrial uses of asbestos fibres have multiplied following the discovery of large deposits of chrysotile (white asbestos) in Canada in 1880. Over a thousand uses of asbestos have been listed. The fibres used besides chrysotile are crocidolite (blue asbestos), amosite (brownish) and anthophyllite (white). The latter three types are amphibole minerals. The various biological effects of asbestos may be dependent upon the type of fibre to which the individual has been mainly exposed. Chrysotile is the commonest fibre and accounts for eighty per cent of asbestos used.

The first case of lung disease associated with exposure to asbestos dust was described in 1900 and was followed by further cases in 1924 and 1928. An investigation in the asbestos-textile industry in 1929 was reported in 1930 and led to the Asbestos Industry Regulations 1931 which took effect on 1 January, 1933. The pulmonary fibrosis associated with asbestos exposure is named Asbestosis and is a Prescribed Disease for the purposes of claiming Industrial Injuries Benefit.

In 1935 pathologists in the U.S.A. demonstrated an association between bronchial cancer and asbestosis which was confirmed in Britain in 1947 in the Annual Report of the Chief Inspector of Factories. In 1955 Doll confirmed the excess mortality from lung cancer in asbestos-textile workers in a factory in the North of England. Follow up of this cohort has demonstrated that in workers with twenty years employment which commenced prior to 1933 the mortality from bronchial cancer is ten times the expected; whereas in workers with twenty years employment since 1933 the mortality observed is no greater than expected. This is regarded as being due to the improvement in environmental control as a result of the 1931 Regulations.

In 1960 Wagner reported an association between exposure to crocidolite asbestos in the mining areas of the North West Cape Province of South Africa and a rare form of malignant tumour of the pleura known as mesothelioma. This publication stimulated the retrospective epidemiological study by Newhouse and Thompson in London, which demonstrated a similar association between deaths due to mesothelioma and asbestos exposure. Although there is little doubt of the association, and crocidolite from the North-West Cape as opposed to other mining areas appears to be the most dangerous, there remain about fifteen to twenty per cent of cases where no asbestos exposure history can be obtained. Both Wagner and Newhouse found cases whose exposure was either neighbourhood (i.e. living near a mine or factory) or domestic (i.e. exposed to dusty overalls or clothing). Recent evidence suggests that the general population is exposed to levels of chrysotile asbestos far less than those encountered in industry and insufficient to be regarded as a danger to the public health. These levels are, indeed, well below the Hygiene Standards

required at present to comply with the Asbestos Regulations 1969. The neighbourhood and domestic exposure cases were initially exposed twenty to forty years ago, the latent period required for mesothelioma to develop, when conditions in mines, mills and factories were not as well controlled as they are today. The current situation in the United Kingdom is that the incidence of new cases of asbestosis has continued to increase because of deficiencies in the 1931 Regulations. The Asbestos Regulations 1969 which took effect in May 1970 have a far wider scope and application, attempt to implement a threshold limit value and are particularly stringent with regard to the use of crocidolite. The hygiene standards for crocidolite are ten times more stringent than those for chrysotile. Chrysotile appears to carry a much smaller risk of inducing mesothelioma than crocidolite when the dust control is good.

The new cases of asbestosis and of mesothelioma are occurring in industries which were not covered by the 1931 Regulations such as the insulation industry and ship-building and repairing industry where environmental hygiene has been difficult to control. Experience in factories where the 1931 Regulations have been conscientiously applied indicates that dust can be reduced to apparently safe levels. The Asbestosis Research Council has issued Notes for Guidance in an attempt to assist users of asbestos products to minimize the risk to their employees and others. In the control of asbestos related disease it is imperative that wherever practicable all measures are taken to prevent the escape of harmful concentrations of dust. Dust masks and respirators are an admission of defeat in controlling the environment, and must only be regarded as a secondary defence measure. In a recent judgement against an asbestos company amounting in total to £86,469 damages, Mr. Justice Thesiger stated that failure to wear respirators continuously did not amount to negligence on the part of the plaintiff, and he held that the "sole, direct and effective cause" of the asbestosis contracted was the employer's breach of statutory regulations.

The disposal of asbestos waste must be closely supervised. The Asbestosis Research Council with the approval of the Ministry of Housing and Local Government has issued a Code of Practice for Guidance which has been made freely available to all local authorities. The generation of dust in a factory attracts the Asbestos Regulations 1969 and is the concern of H.M. Factory Inspectorate. The emission of asbestos dust or other harmful chemical waste from the factory into the general atmosphere becomes the concern of the Chief Alkali Inspector attached to the Department of Health and Social Security. When asbestos waste is conveyed from the factory to be disposed of on a municipal tip, the health inspector of the local authority is generally charged with responsibility for ensuring that it is buried and cannot become a public health hazard.