

Asbestosis — A Diagnostic Enigma

A Personal View

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Although the carcinogenic properties of asbestos are presently attracting a good deal of attention, asbestosis is still the earliest lung disease resulting from exposure to it and its incidence in an exposed population is the most useful indicator of the degree of dust control exercised over a period of time.

The diagnosis of asbestosis depends upon: (1) An adequate occupational exposure history. (2) Physical signs of pulmonary fibrosis. (3) Progressive radiological changes. (4) Confirmatory measurements of altered lung function.

Asbestosis is a clinical entity and is readily diagnosed when all the above-mentioned criteria are met. Problems in diagnosis are encountered when one or more of the diagnostic criteria listed above cannot be substantiated. At the present time every effort is made to diagnose the disease in its early stages in the hope that removal from further exposure will prevent the direct and indirect complications.

Regulations to control the asbestos industry in the United Kingdom were made in 1931.¹ The evidence upon which they were based was gathered in 1929 by Merewether and Price, the former a medical inspector of factories (who later became senior medical inspector) and the latter an engineering inspector of factories.² Merewether selected for his studies the textile branch of the industry (a branch manufacturing industrial textiles for insulation, friction and packing material applications), and some preliminary processes in other branches. Each individual's previous industrial history, subsequent to leaving school, was noted in detail. Merewether considered this to be essential in order to exclude people whose previous work may have been in any of the numerous processes involving exposure to free silica and other dusts.

Merewether's investigations led him to state: "To sum up, therefore, it appears probable that concentration of dust and length of exposure as factors in the production of fibrosis are interdependent within certain limits. While it seems necessary for

the production of generalized fibrosis of the lungs that a definite minimal quantity of dust must be inhaled, the lower the concentration of dust in the air breathed, the longer the lapse of time before the fibrosis is fully developed, and within a certain limit, the higher the concentration of dust, the sooner the fibrosis becomes fully developed and the more intense the involvement of the lung tissue."

He went on to hypothesize that, in the light of the above reasoning and the evidence which pointed to it, the application of dust control measures would cause "firstly, a great increase in the length of time before workers develop a disabling fibrosis, and secondly, the almost total disappearance of the disease, as the measures for the suppression of dust are perfected."

The improvements made in the British manufacturing industries after the 1931 Asbestos Industry Regulations took effect may be said to have occurred slowly and progressively from 1931 onwards and although much was achieved before World War II, the major advances in dust control probably took place in the 1950's.³

During the years of World War II regulations were relaxed and conditions in factories deteriorated. One of the problems in quantifying dust exposure data is how to take account of the effect of historic events on working hours and working conditions. There is no way at present of analysing the effects of depressions, booms and other socio-economic phenomena when attempting to measure cumulative dust exposure over any given period of time.

Because of the limitations of the 1931 regulations, and because the regulations applied to manufacture but not usage of products, the hoped for reduction in cases of asbestosis in the U.K. did not occur at a national level. The Senior Medical Inspector's Advisory Panel on Asbestos, in its report to the minister of labor in 1967⁴ gave the following reasons for the increasing incidence of asbestosis: (a) The clinical criteria for diagnosis have changed since the 1920's. (b) Laggards, the total of whom was not known, tended to be excluded from the process to which the 1931 regulations applied. (c) There had been an increase in overall consumption of asbestos and a rising population of exposed workers. (d) Medical supervision of workers in the asbestos industry (originally recommended by Merewether) had not been extended to workers in new processes as these were introduced.

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