

- Confirmation of the Different Potency of Fibres - New Directions in Asbestos-Related Diseases

In August 1988, a world-wide conference on dust-related diseases, the seventh to be convened since 1930, was held in Pittsburgh, PA, USA. More than a thousand participants from more than 50 countries and all continents attended the conference, co-sponsored by the International Labour Office (Geneva) and a number of US government agencies, NIOSH, OSHA, MSHA and BOM.

Fibre Types and Pathogenic Potency

Four presentations added further weight to the evergrowing body of evidence for a difference in potency of asbestos fibre types. Dr. M. Neuberger of Vienna reported that the 5 mesothelioma cases found in his Austrian cohorts of A/C factory workers were all associated with pipe production; the only production sector in which crocidolite was used. Dr. Janet Hughes, of Tulane University in New Orleans, also reported that all 9 mesothelioma cases found in A/C workers from two manufacturing plants were from the unit where pipes were produced, using crocidolite with chrysotile. Dr. E.A. Gaensler of Boston reported on asbestos-related diseases in 90 original employees of a filter paper plant using exclusively crocidolite (1951-1970), followed up to 1987. In this group, there were 34 with asbestosis and 8 deaths; 8 have died from lung cancer and 10 mesotheliomas were found. In a nearby plant using exclusively chrysotile (1962 up to the present), 90 workers employed for over 20 years were followed. Only two cases of minimal fibrosis were found, and no cases of mesothelioma or lung cancer have yet occurred.

Finally, two presentations were made which concur with the widely held view that contrary to chrysotile, amphibole fibres are more durable, and accumulate in lung tissue. Dr. F.D. Pooley of the University of Wales in Cardiff, U.K., presented the results of assessments of fibrous mineral content of lung tissue samples from workers of a British asbestos textile plant, using predominantly chrysotile, and intermitently other asbestos fibre types.

His data showed a predominance of amphibole fibres, which does not reflect the proportional use of the various asbestos types used in the plant. Dr. A. Tossavainen of the Institute of Occupational Health in Helsinki presented results of mineral lung contents of mesothelioma cases in Finland, 55% of which had possible, probable or definite asbestos exposure. The predominant fibrous minerals found were amosite, crocidolite and anthophyllite, while chrysotile and other inorganic fibres were only occasionally found in some samples.

As more evidence is regularly brought forth of a greater risk from crocidolite than chrysotile, especially for mesothelioma, it will be interesting to see if some US regulatory agencies will modify their view that all asbestos fibre types are equally potent in their risk assessment models.

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Fibrosis as a Precursor for Lung Cancer

Dr. M. Kuschner of the State University of New York, at Stony Brook delivered a firm restatement of the hypothesis that the initial pathological response to inhaled long fibres was interstitial fibrosis, which then sets the stage for the eventual cancerous proliferation. In line with this concept, Dr. J. Hughes reported her observations on lung cancer mortality in relation to X-ray abnormalities in Louisiana asbestos-cement workers. No significant excess was found in workers with no abnormalities, but a significant excess with plaques,

pleural thickening or calcifications. However, a significant excess was found in workers with opacities, the risk growing with increasing profusion of opacities.

Follow-Up Studies

Follow-up reports of cohorts previously studied were presented. Dr. Neuberger's study of asbestos-cement workers in Austria covered 540 deaths, where 52 from lung cancer were found. After adjustment for age and sex-specific smoking habits, there was no relationship between risk and cumulative exposure or length of exposures, indicating that the improved working environment of modern manufacturing plants effectively reduces disease and early deaths. Similar conditions were reported on by Dr. Albin of Sweden, who found that in her Swedish asbestos-cement workers cohort, neither morbidity nor mortality from lung cancer was significantly raised at median estimated intensity of exposure of 1.2 f/ml. A presentation by Drs. E.A. Gaensler and C. McLoud of Boston University, of New England workers showed that asbestosis is now developing much more slowly, if at all. Through X-ray readings of workers suffering from asbestosis, it was established that confined exposure to present day low exposure levels does not adversely affect progression of asbestosis. Im-

New Directions in Research

As asbestosis has declined in incidence and severity, with resulting decrease in asbestos-related lung cancer, more attention is now being given to changes of the pleura. Among the papers dealing with pleural changes, a strong distinction was made between a diffuse thickening of the pleura, which may cause some impairment of the lung function, and circumscribed pleural plaques.

Dr. E. Gaensler has followed 385 persons who have pleural plaques from 8 to 22 years. The circumscribed plaques by themselves had no perceptible effect on lung volumes and gas exchange. Neither their extent nor degree of calcification was related to lung function.

The increased interest in abnormalities of the pleura led to a special session devoted to revising the 1980 ILO classification of pneumoconiosis radiograms. An ILO task force led by Dr. C. Rossiter presented a comprehensive proposal called "ILO Classification 1991." The practical application of the new proposed classification will now be studied.

Thus, in some major areas of asbestos-related diseases, presentations at the 1988 International Pneumoconiosis Conference reinforced conclusions, which had been reached at prior recent international meetings held in 1987, such as the WHO/IARC Symposium in Lyon and the XXIIth International Congress on Occupational Health in Sydney, namely that there is indeed a great difference in potency between the different asbestos fibre types. As was pointed out recently by Dr. J.C. Wagner and co-workers: "We believe therefore that chrysotile is the least harmful form of asbestos in every respect and that more emphasis should be laid on different biological effect of amphibole and serpentine asbestos fibre." (1) ■

proving the working environment also reduced disease and mortality in the West German asbestos-cement industry, as shown in E.G. Beck's study of the industry from 1981 to 1986. Overall, malignant respiratory diseases caused fewer deaths than other non-malignant and non-asbestos-related diseases.

Thus, the recently published findings in modern asbestos industry, showing the obvious benefits of adequate engineering controls and safe work practices, demonstrate that the safe use of asbestos, with no undue risk to workers, is a realistic goal.

(1) J.C. Wagner, M.L. Newhouse, B. Corrin, C.E.R. Rossiter and D.M. Griffiths, (1988). Correlation between fibre content of the lung and disease in East London asbestos factory workers. Brit. J. Ind. Med. 45:305-308.