Comment

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American Academy of Occupational Medicine

Asbestos as a Hazard to Health

Fact and Speculation

W. Clark Cooper, MD, Berkeley, Calif

A RESURGENCE of interest in the asbestos minerals as environmental hazards to health has arisen because of increasing world production of asbestos, successive indications of associations between asbestos and pulmonary fibrosis and various malignancies, and, more recently, the demonstration of asbestos or asbestoid bodies in presumably nonexposed populations.

The major asbestos minerals of commerce are chrysotile, crocidolite, amosite, and anthophyllite, with tremolite and actinolite being of considerably less importance. The properties of these various fibrous minerals have led to an extraordinary variety of uses, so that world production has increased from a few thousand tons in 1900, to 1.3 million tons in 1950, to over 3.5 million tons in 1965. Over 90% of this is chrysotile. The United States uses about one fourth of world production, practically all imported from Canada or Africa.[1]

Asbestosis

The first facts to be discussed will be those relating to asbestos pneumoconiosis, the disease that has come to be known as asbestosis. No one disputes a cause-and-effect relationship here, but we are still deficient in our knowledge of pathogenesis.

Are all forms of asbestos equally hazardous? The evidence is against this. Chrysotile disappears more readily from the lungs than other forms and in animals seems to be less fibrogenic. The prominence of pleural calcification varies from area to area and type to type. For example, in Finland, Raunio[2] has recently reported a review of 600,000 chest x-ray films which show that in communes where anthophyllite mines are located, up to 9% of films showed pleural calcifications, whereas in other parts of East Finland not bordering on producing communes the prevalence was only 0.5% per thousand. Nothing comparable to this has been reported in other asbestos-mining areas.

A second question regarding asbestosis relates to its prevention by industrial hygiene. Is it true that all that is needed is the application of currently recommended standards for dust control? Most people who have looked into the basis for the present threshold limit value of 5 million particles per cubic foot for asbestos, which has been recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) since 1946, realize that it rests on shakier evidence than most. Midget impinger sampling used in determining dust concentrations include all dusts; and the asbestos-containing dust that is counted is mainly grains, although, rarely, some fibers are included. A large proportion of asbestos

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Reprint requests to School of Public Health, Earl Warren Hall, University of California, Berkeley 94720 (Dr. Cooper).