

Environmental Asbestos: Threat or Phantom

The paradox of asbestos is that although its primary uses have been for safety—in fire insulation and vehicle brake linings—it now is widely condemned as a hazard to man's lungs.

The association seems strong, several investigators have said, between long-time industrial exposure to asbestos and certain bronchial diseases, including pleural mesothelioma.

Based on what is known, however, the fears about asbestos' presence in the environment seem exaggerated, said George W. Wright, MD, head, Department of Medical Research, St. Luke's Hospital, Cleveland. He spoke at the American Thoracic Society meeting in Miami Beach.

The goal for the next few years, he said, should be more research about safe ways to use asbestos. "This is the only sure way to combat unwarranted apprehension and speculation."

Use Increased

Asbestos use has increased in recent years, but most of the additional material has gone into products which tightly bind the fibers, preventing their escape into the atmosphere. These include asbestos tile and cement.

Some asbestos-containing products do wear, however, and the fibers are released. These include brake linings, siding, and shingles.

The fibers that might be released from all kinds of "wear" either become bound into the soil or are captured in rain or cleaning water.

Asbestos is almost universally present in river water, but in very small amounts.

That asbestos is indestructible is a fallacious concept, "and the belief that it accumulates on the surface of streets, etc., seems ill-founded and will require some proof," Dr. Wright said.

Less than 5% of US asbestos production goes into brake linings. The high heat of friction

destroys the asbestos, converting it into an amorphous material, forsterite.

"Of the total materials removed from brake linings during their use, less than 5% appears as actual asbestos. The number of asbestos fibers released by normal friction material wear must be small indeed," the Cleveland investigator commented.

If asbestos fibers are in the air breathed by the general public, the rare occurrence of pleural mesothelioma unrelated to occupation "strongly suggests that there is a tolerable level of airborne asbestos fiber."

Structures similar to asbestos

bodies have been found in 25% or more of the general public, according to autopsy studies. But these structures have not been proven to be asbestos.

At least 20 widely disseminated substances are capable of forming these structures in lungs, he said. One of the most common, in wider use than asbestos, is talcum powder.

So far, no laboratory method has been developed to determine which ferruginous bodies in a lung are asbestos. Until one is developed, asbestos should not be blamed for all the fibrous material found in lungs, Dr. Wright said.

... Miners Suffer Pleural Damage

In a group of Canadian asbestos miners with parenchymal disease, pulmonary function was invariably more impaired in the presence of pleural disease, reports Margaret R. Becklake, MD, associate professor of epidemiology and health, McGill University, Montreal.

Physicians have tended to disregard the significance of pleural changes on pulmonary function. This study suggests that such changes have a significant effect on all aspects of lung function.

When 1,069 asbestos workers were surveyed, marked pulmonary fibrosis was found in 1.4%. All were men over age 55.

The degree of parenchymal disease was rated according to radiological findings. When pleural disease also was present, pulmonary function was invariably less by every measurement—lung volume, flow rate, and diffusing capacity at rest and during exercise.

The effects of pleural changes in restricting lung volume were expected. "The consistent asso-

ciation of gas-exchange impairment with the presence of pleural changes suggests that free movement between lung and chest wall is necessary to preserve optimal ventilation to perfusion imbalance," Dr. Becklake said.

"In other words," she continued, "free pleural movement appears to be necessary for normal gas-exchange."

Exposure to asbestos dust may result in diffuse generalized pulmonary fibrosis. The pleural changes (thickening and/or pleural calcification) are a common finding among workers exposed to asbestos dust.

In regard to pleural plaques, George W. Wright, MD, said "in an area where asbestos fiber is known to be present in considerable concentration (such as eastern Quebec) . . . it is proper to consider these findings as evidence of asbestos exposure."

There is no evidence associating the presence of pleural plaques with development of the much more serious disease, mesothelioma, however.