

Hidden dangers in the air we breathe

Particles of certain widely used mineral substances are so small that they can't be stopped by the excellent filter system in our noses, or by any ordinary means. If allowed to be present in your home or place of work or business, minute particles of some materials may lodge in your lungs and eventually cause cancer.

The first report of lung cancer believed to have been caused indirectly by asbestos fibers was recorded in 1935. Many studies have since been reported in which examinations have been made of or autopsies performed on persons who have been in direct contact with asbestos, either in the mining and manufacturing phase or in connection with its many uses as an insulating material.

There is now practically no doubt that a person greatly increases his chances of developing a really dangerous disease called asbestosis if he is subjected for a time to the fine asbestos dust that is possibly present within one-half mile of an asbestos manufacturing plant in the country or anywhere within a considerable distance from the framework of a new building that is being fireproofed by spraying it with an asbestos-based product. (A single major tall building in New York City will receive nearly 5000 tons of asbestos spray, of which a great part floats off into the air of the city. It has been suggested that, for city dwellers, the hazard of lung cancer may be as great from inhalation of asbestos as from the smoking of cigarettes.)

And while the symptoms of asbestosis, a non-malignant lung disease, take years to develop, it would seem at this time that there is a good likelihood that after 20 to 30 years have elapsed, lung cancer will develop in a surprisingly high percentage of the cases. And the asbestos worker who smokes cigarettes regularly increases his cancer risk enormously. 50 percent of 3000 autopsies in one study showed asbestos particles in the lungs.

Unfortunately, experts have now about concluded that a practical hazard and a definite long-term danger exists, not only for directly exposed persons, but for practically everyone who is forced to exist on the highly contaminated air found in most urban and some rural areas. Once in the lungs, the asbestos particles remain there throughout life. Even kindergarten children have been exposed, in using asbestos powder with water as a form of modeling clay.

The root of the problem

Why this comparatively sudden awareness of a danger that must have existed for two thousand years or more? Actually, modern medical researchers had to resort to the electron microscope in order to identify positively the minute pieces of "encapsulated" mineral fiber. Many are so fine that they cannot be seen when floating in the air around us. And there are literally thousands of sources for the material in man-made products in our environment.

The long fibers of asbestos, like those of cotton and wool, for example, have those qualities required for spinning the material into a thread and thence into fireproof garments, curtains, shields, ironing board covers, house insulation, insulation for electric wires, and the like. The short fibers are mixed with various binders, such as cements and plastics, and the mixture compressed into pipe coverings, brake linings, clutch faces, roofing and siding shingles, filter cloth, yarns and ropes, plaster, rubber goods, some paints, siding, paper, and many molded products. Actually, the number of products on the market which contain asbestos is believed to exceed 3000. However, there is a favorable trend; some manufacturers are now offering mineral fiber material for certain uses that does not contain asbestos.

Fortunately, the great majority of these products utilize the asbestos as a mixer or extender and bind it into some other material where it is not available in the free state, except when the material disintegrates with time and weather. When used in firm mixtures, as in asphalt roof coatings and in plastics, the likelihood that the fibers will separate and become airborne is greatly reduced, as is the danger of their being inhaled in harmful amounts.

Protective actions taken

Serious research has been in progress for some years to investigate the possible dangers to health that may be

involved. Many companies have taken certain action needed to reduce the hazard. As an example, special plastic bags have been developed as containers so that water and dry asbestos can be mixed safely to be used as heat insulation on the exterior of heating boilers and pipes.

New York City, Philadelphia, and the State of California have taken action to control the manner in which buildings are sprayed with asbestos. Rules governing adequate enclosure of the area in which the spraying takes place and cleanup and disposal procedures have been outlined. Indeed, following the initial action in April of 1970 in New York City, the hazard was considered sufficiently great that the mayor ordered the spraying of asbestos halted wherever possible in all construction projects under supervision of the city government; the decision, at least in part, was based upon testimony presented by Dr. Irving J. Selikoff, of Mount Sinai Hospital School of Medicine, who is one of the modern pioneers in asbestos epidemiology. Based upon work done by his group, Dr. Selikoff stated that lung cancer was the cause of death of almost 1 out of every 5 asbestos workers in the city in the past 27 years.

The report, which summarized findings of examinations of 632 asbestos insulation workers, covered a period of 25 years. During that period, 358 persons in the group died. Of that number, 72 deaths were due to cancer of the lung or pleura. Statistically, in consideration of normal mortality rates, only about 9 deaths would have been expected. The danger of mesothelial tumors exists not only among asbestos workers but also with others after only "apparently minimal and non-occupational" exposure to asbestos dust, but usually after a long delay or latent period of forty years or more.

Opinions differ

As is so often the case, there are some who feel that the reasons for concern regarding asbestos fiber inhalation are not as well based as they might be. Dr. George Wright, a pulmonary disease specialist in Cleveland, who has served industry as consulting expert on asbestos, has commented to the effect that some of the concern may be ill founded regarding the large quantities of asbestos supposedly put into the air from automobile brake linings. He stated that "the amount of asbestos fiber used in friction material in the United States was estimated at less than five percent of the total in 1965. And the high heat of friction destroys the asbestos, converting it to material no longer having the characteristics of asbestos...."

"Serious exposures to asbestos fiber can occur in certain occupational and immediately adjacent environments but there is evidence that a low concentration of asbestos in the air breathed by the general public is not likely to be harmful."

Even with the increased awareness of the potential

dangers involved, the number of uses for asbestos continues to increase. Even in the home, there are many areas, from roof-asbestos shingles—to cellar-asbestos insulation and cement on boiler and pipes—and on ironing boards, where asbestos is to be found in one form or another. Asbestos board is much used, and sawing it in the hobby shop puts countless fibers into the air of a home.

In California a bill has been introduced to prohibit the use of asbestos or fiber glass as linings in air duct systems of new buildings.

Lately, talcum powder for babies has been found to contain substantial amounts of asbestos particles, and these are of course readily inhaled by infants and those who care for them. Talc dust alone presents problems similar to asbestos but the risks are not so great.

In late 1970, over 100,000 women's coats were manufactured and sold from a blend of melton-type cloth imported from Italy which contained wool, nylon, and asbestos. While it is almost a practical impossibility to recall the coats, according to Mr. H. Mendelsund, an officer of the International Ladies Garment Workers Union, union members have been ordered not to cut or sew cloth containing asbestos.

The main reason why this cloth was made and imported was because of the cost advantage it might offer due to the possibility of a lower import duty on asbestos material as against other fibers.

If you have such a coat—the label will tell—it should be "taken out of circulation." *Family Health* reports that Dr. Selikoff's advice was that one should bury a coat that contains asbestos fibers.

Fiber glass has also been under suspicion for some time as a cause of respiratory injury. There have been suggestions that it might be harmful in view of its use in home furnishings and in the ducts of heating and cooling systems. Information available up to this time does not indicate any substantial danger from this cause, though it is established that "man-made vitreous fibers" have become lodged in human lungs. Pending availability of further information concerning the possibility of harm from glass fibers, we suggest that city and state governments and individuals should not allow use of glass fiber in any part of a heating, cooling, or ventilating duct system of a home, office, or factory. Glass fibers are regularly used in the form of a mat as a filter in warm air heating systems, but it is believed that in this use the danger of putting glass fibers of inhalable size into the air stream is not great.

Everyone should be alert to the potential danger that exists in the handling or use of any articles made of or containing asbestos fibers or glass fibers. We do not know at this time how convincing the evidence by Dr. Wright tending to minimize the hazard from asbestos may be. Our advice would be, in any event, to avoid contact with asbestos in every practicable way, especially in connection with building, heating, and plumbing operations. On glass fibers as a source of skin irritation, see *Consumer Bulletin*, November 1969.