

ASBESTOS

The Controversy Continues



With thousands of lawsuits filed against its miners and manufacturers, the multi-billion-dollar Manville Corporation filing for bankruptcy because of those lawsuits, and a proposed federal ban on its use, asbestos is considered a dead issue by many in the U.S. construction industry.

But has the Environmental Protection Agency (EPA) used incomplete and misleading evidence to ask for the death sentence against the mineral? Several scientific authorities, as well as asbestos mining and manufacturing interests, are now making that claim.

Is the presence of asbestos at any level an unacceptable cancer threat, as the EPA contends? Or, as asbestos' supporters claim, can the mineral continue to be used with adequate precautions? Let's look at the facts about asbestos—its uses, its health impact, its economic impact, and the effects of its proposed substitutes.

Uses

The word "asbestos" represents several types of fibrous mineral silicates which belong to two groups of rock-forming minerals. Chrysotile, or "white" asbestos, comes from the serpentine group; both amosite ("brown" asbestos) and crocidolite ("blue" asbestos) are representatives of the amphibole group.¹

While man has known of asbestos' ability to resist heat for thousands of years, most of the 3,000-plus applications for the mineral have been discovered within the last century.

The most common application of asbestos is in automobiles and trucks. Brake linings, automatic transmission friction components, and manual transmission clutch facings containing asbestos help maintain maximum effi-

ciency under adverse driving conditions.

Another frequent application is the use of asbestos as a fire retardant in ceilings and walls, and on pipes. The material is mixed into either the original ceiling tiles, wall boards, and pipe insulation, or into a liquid coating which is then sprayed onto existing ceilings, walls, and pipes.

Asbestos can also be mixed with cement, creating an inexpensive and durable material which can be used in any application suitable for cement. This includes many building applications, as well as piping for water mains, irrigation projects, drains, and sewers.

Health Risks

Both the proponents and opponents of the EPA's proposed ban agree that breathing asbestos fibers can cause cancer. The disagreement centers on their differing opinions of the potential health risks.

Asbestos fibers are "friable"—easily released to the air by any cutting, drilling, forming, or friction action. Because the fibers are colorless, odorless, and usually microscopic in size, they can be inhaled without detection and lodge in sensitive lung tissue for decades—with the potential to cause cancer at any time.

Substantial numbers of asbestos fibers can easily make their way into drinking water supplies as well. This can occur both in areas where asbestos occurs naturally (such as northern California and Quebec, Canada), and in situations where older asbestos/cement pipe is decaying and releasing fibers into the water supply. However, no study has linked the drinking of asbestos-laden water to an increase in cancer rates.

According to the EPA² many health studies have linked asbestos exposure to an increased incidence of lung cancer among persons involved in the mining and milling of asbestos, and in the manufacture, use, and maintenance of products containing asbestos.

Lung cancer, along with mesotheliomas of the pleura (the lining surrounding the lungs) and the peritoneum (the lining surrounding the abdomen), "...account for about 90 percent of the excess cancers seen among workers exposed to asbestos," the EPA filing continues.

The Chronic Hazard Advisory Panel (CHAP) on Asbestos, in its report to the U.S. Consumer Product Safety Commission (CPSC), also associated asbestos exposure to increased incidences of several other cancers, mostly of the gastrointestinal tract.

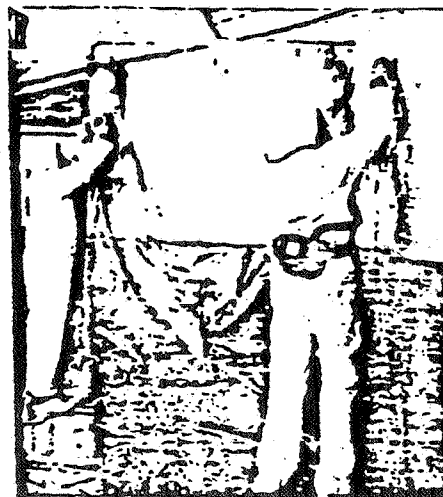
Asbestosis, an often fatal form of chronic lung fibrosis, has been associated with high concentrations of airborne asbestos fibers in the workplace by a study conducted by Dr. Irving J. Selikoff, a noted epidemiologist in the Environmental Science Laboratory at Mount Sinai Medical Center in New York City.³ "However," said the EPA, "it is still considered uncertain whether asbestosis occurs as a result of non-occupational exposures."

Estimates of the number of persons adversely affected by asbestos vary greatly. Selikoff's own estimates have ranged from 40,000 annual deaths—at a 1978 Occupational Health and Safety Administration (OSHA) hearing—to 8,000 deaths per year—in a 1983 *Boston Globe* interview.⁴

In early 1986, the EPA sought to minimize the cancer risk caused by asbestos by proposing to implement the following restrictions during the

By Rita Tatum

Some project the market potential for asbestos removal at \$2 billion.



summer of 1987:

- An immediate ban on the manufacture, importation, and processing of all cement pipe and fittings, roofing and flooring felts, felt-backed sheet flooring, floor tile and clothing, which contain asbestos.

- The requirement of an annual permit (issued by the EPA) for the mining and importation of bulk asbestos, and for the importation of most other products containing asbestos. Consumption would be severely limited, based on each firm's average annual usage during the 1981-83 period. Restrictions would start at 30 percent of the 1981-83 average in the first year, decreasing by three percent each year until a total ban is achieved at the end of the tenth year.

Why has the EPA proposed a total ban? Because, in the agency's opinion, any level of asbestos exposure carries some risk of cancer. The model used by the agency "... assumes that any exposure increases risk," according to the proposed rulemaking.

"The choice of the linear model is reasonable because there is no evidence for a threshold level of asbestos exposure below which there is no increased risk," the agency continued. "It is further supported by evidence of cancers among populations whose asbestos exposure is believed to have been lower than levels reported in the epidemiology studies of asbestos (cited by the agency)."

But is the evidence presented by EPA conclusive? Not according to agency officials testifying during recent hearings on the proposed ban. They said EPA estimates of the health risk created by asbestos, which were prepared by non-scientific personnel, ran much higher (sometimes 20 to 90 times higher) than similar OSHA data.⁵

Statistically, this means as few as 21 cases of cancer could actually be avoided by the proposed ban, compared to the EPA's estimate of 1,930.

Writing in the *New England Journal of Science*, University of Vermont

pathologist Dr. John E. Craighead said in 1983 that no definite relationship between the amount of asbestos exposure and the development of mesothelioma has been discovered.

Abdominal mesotheliomas, he added, were observed only in persons exposed to amosite (brown) and crocidolite (blue) asbestos—not the white (chrysotile) type which represents the vast majority of the asbestos currently produced and in use. Dr. Craighead's findings dispute an assertion in the EPA filing that no one type of asbestos is more or less carcinogenic than another.

Two Selikoff studies, one published in 1969 by the *Journal of the American Medical Association* and the second published by *Annals of the New York Academy of Sciences* in 1979, indicate that smoking is a much larger risk factor than asbestos exposure.

The death rate for smokers, whether exposed to asbestos or not, was about 12 times greater than that for non-smokers.^{6,7} And asbestos workers who smoked died at a rate of 53 times greater than nonsmokers not exposed to the mineral.

A lung specialist at Massachusetts General Hospital and Harvard Medical School, Dr. Barry Levine, claims that a large number of people diagnosed as suffering from asbestosis may be, instead, suffering from an incorrect diagnosis.

"A person with obstructive lung disease (such as emphysema) can be read as having an X-ray compatible with asbestosis," Dr. Levine told the *Detroit News*.⁸ X-rays of the white marks on the outside of the lungs, presumed to be caused by asbestosis, are similar in appearance to lesions caused by smoking-related illnesses.

"I have not seen a new case of asbestosis in two or three years," Dr. Edward A. Gaensler, who is involved in a National Institutes of Health-financed research project, told the *Boston Globe* four years ago. "Ninety percent of the cases referred to this

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laboratory do not have asbestosis. Asbestosis is a disappearing disease."

"When asbestos mortality is measured against cigarette smoking, alcohol consumption, and other preventable factors in the environment, one is forced to conclude that control priorities do not appear to be cost-competitive," said Arthur M. Langer, associate director of Mount Sinai's Environmental Science Laboratory (the same facility which employs Dr. Selikoff).

"This does not mean we should be opposed to the control of this preventable disease," he continued. "But we should put this problem into perspective."

Langer referred to an EPA estimate that the proposed ban, if it becomes law, would cost over \$2 billion to implement while avoiding 1,930 measurable cases of cancer between the years 1985 and 2000, based on typical data.

This would represent a cost of over \$1 million for each case avoided. And if the testimony by EPA officials regarding the inflation of cancer risk estimates is correct, the cost per cancer avoided could total as much as \$95 million.

However, the agency adds in its proposal that "...many other cancer cases that cannot be quantified would also be prevented."⁹

Substitutes

In its filing, the EPA identified a number of materials which it said could replace asbestos in most applications. They included the following types of fibers: Aramid, carbon, cellulose, ceramic, quartz, and fibers made from other textiles.

Also included are pre-stressed concrete, reinforced concrete, ductile iron, and polyvinyl chloride (PVC) piping as replacements for asbestos-cement pipe; asphalt-fiberglass composition shingles, wood shingles, and other natural and synthetic tiles as replacements for asbestos-cement shingles; and aluminum siding, bricks,

concrete blocks, PVC siding, stucco, wood siding, and vinyl siding as replacements for asbestos-cement shingles.

Citing National Research Council data, the EPA concludes in its filing that while some substitutes present some risks, none of those risks would be greater than that presented by asbestos.

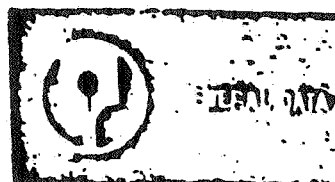
Opponents of the ban, however, say that many of the proposed replacement fibers may end up causing health problems similar to asbestos. "Present knowledge suggests that any fibrous product that has fibers of the same dimensions as asbestos and the same fiber durability in lung tissue will be equally hazardous," said Dr. J. M. G. Davis, head of the Pathology Department at the Institute of Occupational Medicine in Edinburgh, Scotland.

"If asbestos is responsible for as much as 1 or 2 percent of human cancers, then the increase in life expectancy following its elimination would be six to ten days," said Dr. Robert Murray, Chairman of the International Association of Occupational Medicine and employed by the London School of Hygiene and Tropical Medicine. "It would be much more appropriate to eliminate cigarettes or automobiles, which have a considerably greater impact on the quality and length of life."

The Future for Asbestos

Asbestos, a mineral now in limbo, may remain there for many years. Opponents of the EPA's total ban, headed by the Asbestos Institute (an organization funded by government and business in Canada, one of the world's leading producers of asbestos) are asking for the continued use of white (chrysotile) asbestos in certain products, so long as precautionary measures to minimize exposure are used and a ban on cigarette smoking around asbestos is enforced.

While they have not yet succeeded in rescinding the proposal, opponents



may be able to delay its implementation past the planned summer 1987 date.

Meanwhile, the asbestos removal industry will continue to grow. Some projections have placed the market potential at \$200 billion.¹⁰ But the argument will continue over whether removing asbestos creates a greater health hazard than leaving it in place and encapsulating it, and over who will foot the bill to remove asbestos from thousands of America's schools.

The many debates and lawsuits will continue to be argued in the legislative chambers and courts. But without conclusive evidence to support either viewpoint, most of them may drag on through appeals for several decades. □

Notes

1. "Text of the Convention Concerning Safety in the Use of Asbestos," Drafting Committee, General Conference of the International Labor Organization (ILO), Geneva, 1986.
2. "Asbestos, Proposed Mining and Import Restrictions and Proposed Manufacturing Importation and Processing Prohibitions," Environmental Protection Agency, *Federal Register*, Washington, D.C., January 29, 1986.
3. "Mortality Experience of Insulation Workers in the U.S. and Canada," Dr. Irving J. Selikoff, E. Cuyler Hammond and Herbert Seidman, *Annals of the New York Academy of Science*, New York City, December 14, 1979.
4. "EPA Rule Process Criticized," Michael J. Bennett, *Detroit News*, Detroit, March 5, 1985.
5. "Washington Observer: Faulty Risk Assessment May Delay Asbestos Ban," Peter Hoffmann, *Engineering News-Record*, New York City, October 23, 1986.
6. "EPA Rule Process Criticized," Bennett.
7. "Asbestos Exposure, Cigarette Smoking and Death Rates," by Dr. Irving J. Selikoff, E. Cuyler Hammond and Herbert Seidman, *Annals of the New York Academy of Science*, New York City, December 14, 1979.
8. "EPA Rule Process Criticized," Bennett.
9. "Asbestos, Proposed Mining and Import Restrictions," EPA.
10. "Inside Wall Street: There's Growth in Asbestos Cleanup," *Business Week*, New York City, September 8, 1986.