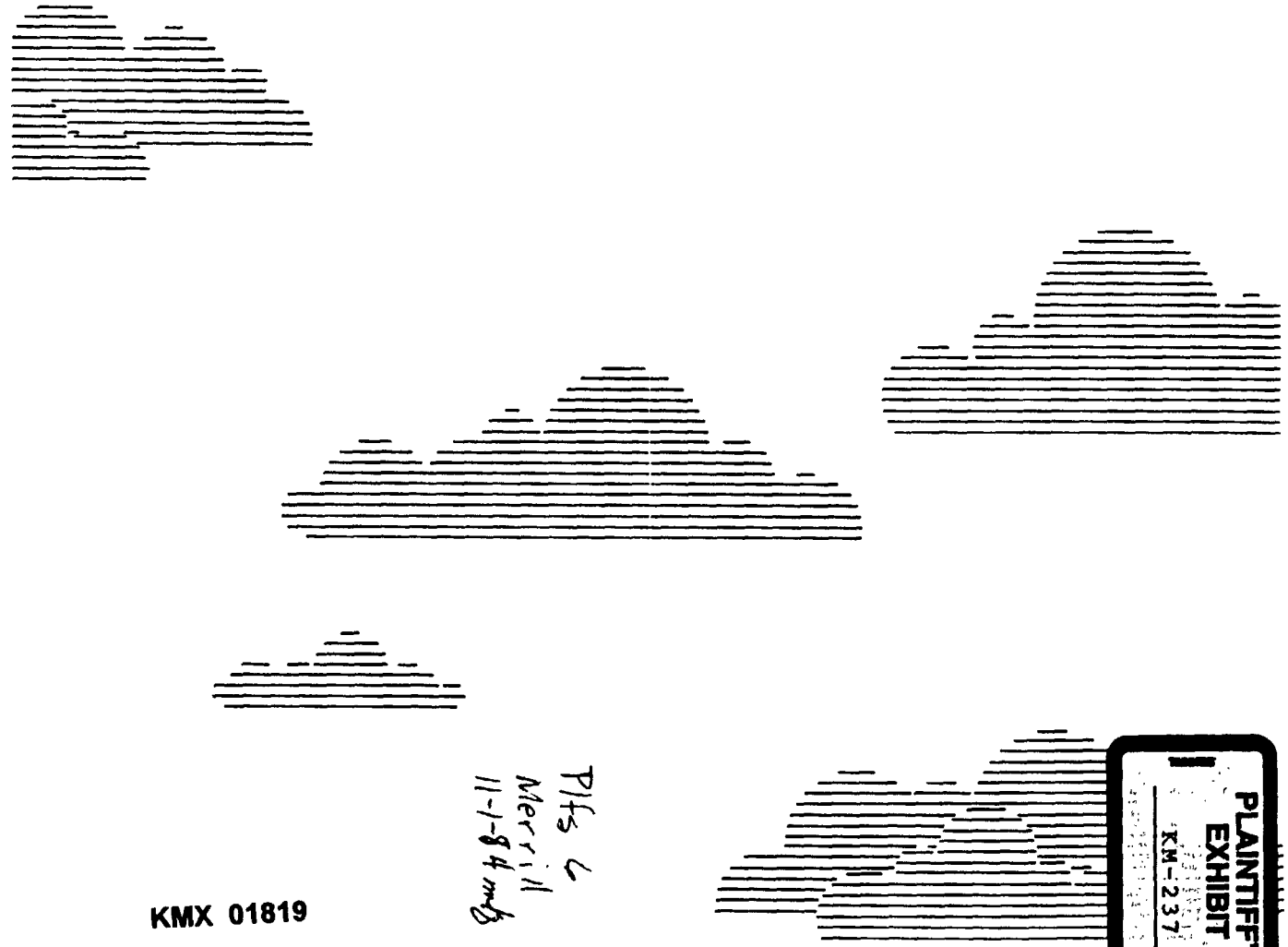
Asbestos in the Atmosphere

A hazard to health?



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Small amounts of asbestos fiber can be detected in the atmosphere in many areas of the world. The fibers come primarily from natural sources and secondarily from the mining and milling of asbestos-bearing rock and the manufacture, application, use, removal, and disposal of some asbestos containing products. There is no evidence that these tiny amounts of asbestos in the ambient air are a danger to human health.[1,2] Nevertheless, the asbestos industry is constantly improving its control of emission sources as part of a worldwide commitment to reduce environmental contamination.

Asbestos Serves the World

Asbestos, used since antiquity, has widespread and important applications in our modern technological society. Because of its remarkable resistance to fire, heat, friction, and corrosion, approximately 3,000 different products containing asbestos, ranging from pot holders to brake linings, from asbestos cement pipe and building materials to packings and gaskets are in daily use throughout the world. In the vast majority of these products, the asbestos is "locked-in" with cement, resins, or other binders which restrict fiber release during normal handling or use, except in machining operations. In 1974, nearly 850,000 tons of asbestos, primarily chrysotile asbestos from Canada, was used in the United States. Worldwide production is about 5 million tons.

Health Questions Arose

In the mid-sixties, questions were raised about the possible health effects of asbestos fibers in the atmosphere By this time, it had been established that the inhalation of excessive quantities of asbestos fiber in occupational settings could lead to an increased risk of respiratory disease and cancer among industrial workers. Speculation about a possible public risk was heightened by (1) repeated findings of small amounts of asbestos fiber (among other particulate matter) in the lungs of city dwellers not known to have had occupational exposure to asbestos, and (2) the discovery of a small number of cases of mesothelioma, a rare form of cancer linked to asbestos exposure, among people living in the immediate vicinity of uncontrolled asbestos sources. A few cases were found among the families of industrial employees who brought substantial quantities of fiber into their homes on their clothes and in their hair. These findings prompted numerous scientific investigations to determine the extent, if any, of the problem of non-occupational exposure.

No Risk to General Public

In 1971, the National Academy of Sciences asked a panel of seven asbestos-health experts to review the available evidence on asbestos in the ambient air. In their report, the experts concluded:

"There is no evidence that the small numbers of fibers found in most members of the general population affect health or longevity."[1]

A similar conclusion was reached in a recent report of an Advisory Committee on Asbestos Cancers of the International Agency for Research on Cancer, a division of the World Health Organization. The report stated that at present, there is no evidence of lung damage from fibrosis by the low levels of asbestos exposure encountered by the general public in urban areas. Further, the report stated, with regard to mesothelioma: *"There is no evidence of risk to the general public at present."*[2]

Many Questions Answered

Among the more important facts upon which these conclusions were based are the following:

1. Asbestos exists naturally in small, though detectable, amounts in serpentine rock formations throughout the world and is constantly being released into the atmosphere through erosion by wind and water, and has been for millions of years.[1]
2. Ambient concentrations of asbestos, even in urban settings, are many times lower than levels known to result in no excess in disease among occupationally exposed populations.[2]
3. No evidence has been found linking the presence of asbestos fibers in the lungs of the general public with an increase in disease, or with the cause of death of those whose lungs were examined.[1]
4. Because of the long latency period of mesothelioma (30 years or longer), "neighborhood" cases being reported today result from conditions existing decades ago.[3] Today, modern dust control systems effectively prevent the emission of significant amounts of asbestos into the atmosphere from mining, milling, and manufacturing operations.
5. No cases of mesothelioma, except for those exposed occupationally or domestically to fiber-laden worker clothing, have yet been discovered within a 20-mile radius of the chrysotile asbestos mines and mills of Quebec, even though emissions in the past were probably heavy by today's standards.[4] Chrysotile asbestos accounts for approximately 97 percent of the asbestos used in the United States today.

Government-Industry Actions

Despite these findings, both government and industry have sought ways to further reduce the amount of asbestos in the air. In April 1973, the U. S. Environmental Protection Agency (EPA) promulgated national emission standards for asbestos to assure that atmospheric concentrations could not increase to potentially hazardous levels in the future. In its justification document, EPA stated: *". . . the available evidence does not indicate that levels of asbestos in most community air cause asbestotic disease . . ."* and *". . . in order to provide an ample margin of safety to protect the public health from asbestos, it is necessary to control emissions from major man-made sources of asbestos emissions into the atmosphere, but that it is not necessary to prohibit all emissions. . . ."*[5]

Among its major provisions, the EPA standard banned the spraying of asbestos-containing fireproofing in high-rise construction, known to be a dusty operation.

The U.S. Occupational Safety and Health Administration, in June 1972, promulgated occupational standards for exposure to asbestos dust in the workplace. Among the OSHA provisions is one designed to prevent employees from carrying asbestos fiber home in their clothes [6] To implement this provision, the asbestos industry provides change rooms, lockers, shower facilities, and, in some cases, disposable coveralls and headgear for employees where necessary.

Dust, which can result from the processing of asbestos, can be controlled. The asbestos industry is dedicated to the safe handling of the remarkable mineral in the workplace and to control of the emission of asbestos fibers into the atmosphere