Asbestos Litigation: The Dust Has Yet to Settle

Jean O'Hare

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Asbestos Litigation: The Dust Has Yet to Settle

Cover Page Footnote
The author would like to express her appreciation of Professors Sheila Birnbaum and Michael M. Martin for their guidance; and to those members of the bar who have generously contributed information for the article, particularly Paul D. Rheingold, Esq., Norman J. Landau, Esq., and Frederick Baron, Esq. I want to give special thanks to Jane Lillibridge, without whose assistance this article would not have been completed.

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COMMENTS

ASBESTOS LITIGATION: THE DUST HAS YET TO SETTLE

I. Introduction

Secretary of Health, Education and Welfare Joseph A. Califano recently stated that 67,000 people each year will die from cancer during the next thirty to thirty-five years as a result of exposure to asbestos. In all, more than 2.1 million individuals are expected to die prematurely. The tragedy is that many of these deaths might have been avoided if government and industry had heeded warnings regarding asbestos available as long ago as the 1930s.

Not only did industry ignore available medical literature concerning the harmful effects of asbestos exposure on their employees, but


According to estimates made by the U.S. Department of Health, Education, and Welfare, between eight and eleven million workers have been exposed to asbestos in the U.S. since the beginning of World War II. Of that total, approximately 1.5 to 2.5 million are presently employed, while the remainder — between 6.5 and 8.5 million workers — were formerly employed in environments with significant asbestos exposure, including 4.5 million who worked in shipyards during World War II. Of these workers, approximately four million are believed to have had heavy exposure to asbestos. Based on epidemiological studies of workers, it is estimated that 20-25 percent of heavily exposed workers die of lung cancer, 7-10 percent of pleural or peritoneal mesothelioma, and 8-9 percent of gastrointestinal cancers. These figures are probably underestimates of lifetime risks, because relatively few workers have yet been followed to the end of their normal lifespan. The total fraction of heavily exposed workers likely to die of these cancers is probably between 35-44 percent. Of the four million heavily exposed workers, approximately 1.6 million are thus expected to die of asbestos-related cancers. Assuming that the excess risk to the 4-7 million less heavily exposed workers is one-quarter of that to the heavily exposed workers, the total number of cancers associated with asbestos in the less-heavily exposed group would be expected to be about 0.55 million, raising the total to about 2.15 million.

Id. at 1-2.

3. There is ample evidence in the medical literature to have put the industry on notice that asbestos was a health hazard to workers exposed to heavy concentrations of the dust. See pt. II infra.
they completely neglected to consider the effect asbestos products would have on workers and members of the general public: lung disease and cancer. Yet labels on asbestos products never gave warning of the most significant dangers (asbestosis and cancer) even after the industry learned of the medical hazards associated with asbestos exposure. As a result, the general public as well as asbestos workers and their families have been unnecessarily exposed to asbestos dust.

The United States Government did not begin to establish regulations to protect workers and the public from the hazards of asbestos until the 1960s. Although today many government agencies have standards, they are designed to protect only against asbestosis;
they are inadequate as a protection against cancer. Furthermore, enforcement of the standards which do exist is unsatisfactory.

The asbestos industry has argued against more stringent health standards, alleging that the cost of compliance would add to the inflationary spiral. However, this argument focuses only on immediate costs of implementing new standards and ignores the long-term benefits, especially prevention of cancer two or three decades from now.

This Comment will review the asbestos industry's disregard of workers' health, the medical literature, and the government standards. It will then discuss compensation problems facing persons suffering from asbestos-related disease. Finally, some basic changes for future asbestos litigation will be suggested to facilitate compensation of individuals exposed to asbestos as a result of industry's inaction and the government's failure to protect workers and the public.

II. The Asbestos Problem: A Historical and Medical Perspective

A. Industry

Asbestos has been known to man since ancient times and has been commercially utilized as an insulation material since at least 1874. Asbestos is a mineral which readily separates into long, flexible fibers. These fibers are generally characterized by high tensile strength, heat resistance, chemical resistance, and favorable frictional properties. Certain grades of asbestos can be carded, spun and woven; others can be laid and pressed to form paper, or used for structural reinforcement of materials such as cement and asphalt.

10. Lung cancer was not mentioned as a governmental concern in controlling asbestos exposure until October 1975, when OSHA proposed a new standard of 0.5 fibers per milliliter and the National Institute for Occupational Safety and Health (NIOSH) recommended a new standard of 0.1 fibers per milliliter. Cancer and the Worker, supra note 8, at 56.
12. Cancer and the Worker, supra note 8, at 72.
13. Id.
14. Borel, 493 F.2d at 1083 n.3.
16. Id.
17. Id.
The advent of the industrial era and the need for packing materials and insulation which would withstand high temperatures increased the use of asbestos. Between 1877 and 1967, world asbestos production and use increased from fifty tons to four million tons per year. Today, nearly one million tons of asbestos are consumed in the United States annually.

Every major commercial variety of asbestos has been found to produce a significant health hazard to persons exposed to the fibers. Diseases associated with asbestos exposure include asbestosis, a non-malignant scarring of the lungs; lung cancer (bronchogenic carcinoma); mesothelioma, a malignant tumor of the chest and lungs or of the abdomen; and cancer of the gastrointestinal tract (esophagus, stomach, colon, and rectum). Asbestos-associated diseases occur not only among individuals directly exposed to asbestos in its mining or manufacturing, but also among individuals working near the application or removal of asbestos material, those residing in the vicinity of asbestos plants, and those living in the household of an asbestos worker.

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18. Id. at 47,653.
19. Id.
21. Asbestosis is an irreversible disease of the lung characterized by clubbing of fingers, cyanosis, and basal rales in the chest. Although it is difficult to diagnose, awareness of the presence of the disease is important since “most deaths of asbestosis are due to intercurrent respiratory infections, rather than to pulmonary fibrosis. Pulmonary infections can be well treated, and experience has shown that many lives can be saved” by early diagnosis. Selikoff & Hammond, Asbestos-associated Disease in the United States Shipyards, 28 CA.-A CANCER J. FOR CLIN. 87 (1978) [hereinafter cited as Shipyards].
22. See Shipyards, supra note 21, at 87. Effective therapy for mesothelioma is not currently available and early diagnosis does not significantly increase the likelihood of survival. Id. Mesothelioma was previously so rare that it was known to occur in only about one in ten thousand deaths in the general population. P. Brodeur, EXPENDABLE AMERICANS 15 (1973) [hereinafter cited as Brodeur].
23. Shipyards, supra note 21, at 88 (table 1), 90 (table 3).
24. Occupations involving direct occupational exposure include the mining of asbestos and the manufacturing of materials containing asbestos such as textiles and brake linings. Interview with William J. Nicholson, Ph.D., Mount Sinai School of Medicine, in New York City (August 31, 1978) [hereinafter cited as Nicholson Interview].
25. Individuals in the construction industry, insulation industry and shipbuilding industry as well as garage mechanics and maintenance men are included in this group. The Mount Sinai School of Medicine is continuing its studies of these groups. Id.
About 1930, an increasing number of worker compensation claims prompted the asbestos industry to investigate the problem of asbestos exposure. The Metropolitan Life Insurance Company conducted a study which examined the dust conditions in asbestos mines and mills. The study indicated that there was a health hazard associated with prolonged exposure to asbestos. Almost half of the workers examined actively engaged in factory work with asbestos for three or more years were diagnosed as having asbestosis. The study revealed a definite increase in the percentage of individuals diagnosed as having asbestosis in relation to the number of years they were exposed. The study recommended better dust control, annual physical and radiological examination of workers, and an industry-sponsored study of the effects of asbestos. Although the recommendations were prepared at the invitation of the industry and were published in Public Health Reports in 1935, no action was taken by the industry. Workers in factories and mills continued to be exposed to heavy concentrations of asbestos dust.

A few years later, mesothelioma, a rare form of cancer known to cause only one in ten thousand deaths in the general population, was linked to either the mining or industrial use of asbestos. In one South African hospital this association was established in thirty-two

29. Sweeney, supra note 4, at 17.
30. Lanza, Effects of the Inhalation of Asbestos Dust on the Lungs of Asbestos Workers, 50 PUBLIC HEALTH REPORTS at 6, 7 (1935).
31. Id. at 7.
32. Id. at 11.
33. See generally id. See also Sweeney, supra note 4, at 17.
34. See Sweeney, supra note 4, at 17. For example, during the years the Tyler, Texas plant was in operation huge piles of loose asbestos fibers lay on the floor of the plant, and there were visible dust clouds. BRODEUR, supra note 22, at 59. For a discussion of the conditions at the plant, see pt. II(C) infra.
of the thirty-three patients with mesothelioma.\textsuperscript{37} The majority of the patients had not actually worked with asbestos but had lived in the vicinity of the mines and mills. Some had left the areas of exposure as young children.\textsuperscript{38}

The link between asbestos and lung cancer was first observed in 1935\textsuperscript{39} and definitely established by 1955.\textsuperscript{40} During the 1960s extensive studies of the occupational effects of asbestos exposure were begun by Dr. Irving Selikoff\textsuperscript{41} of the Mount Sinai School of Medicine.\textsuperscript{42} The results were alarming: more than eighty percent of the asbestos insulation workers with twenty years experience in the trade developed asbestosis;\textsuperscript{43} the risk of lung cancer was ninety times greater if the worker smoked;\textsuperscript{44} and forty percent of the work-

\textsuperscript{37} Id.
\textsuperscript{38} Id.
\textsuperscript{39} \textit{Cancer and the Worker}, supra note 8, at 36.
\textsuperscript{40} Id.
\textsuperscript{41} Dr. Irving Selikoff is one of the leading authorities on the effects of asbestos exposure. He serves as Professor of Community Medicine at the Mount Sinai School of Medicine of the City University of New York, and as Director of its Environmental Health Sciences Center. His research emphasizes problems of environmental cancer, particularly those associated with materials in industry. However, his achievements in "environmental disease research are matched by his contributions in the introduction of isoniazid for the chemotherapy of tuberculosis, for which he was honored by the Lasker Award of the American Public Health Association in 1955." \textit{Toxic Torts}, supra note 5, at 104. Among his associates are Henry A. Anderson, M.D., Assistant Professor of Community Medicine (Environmental Medicine) and William J. Nicholson, Ph.D., Associate Professor of Community Medicine (Environmental Medicine).
\textsuperscript{42} Funds for the research conducted at Mount Sinai School of Medicine do not come from the asbestos industry. The research is funded by the National Institute of Environmental Health Sciences, the National Cancer Institute, the American Cancer Society and the Federal Government. Nicholson Interview, supra note 25.
\textsuperscript{43} School Study, supra note 35, at 3-4. See also Selikoff, Hammond & Seidman, \textit{Mortality Experience of Insulation Workers in the United States and Canada, 1943-1977} (to be published in the \textit{Annals of the N.Y. Academy of Sciences}).
\textsuperscript{44} School Study, supra note 35, at 5.

The significance of the principle of multiple factor interaction has many ramifications. Two are of immediate interest. First, some substances, by themselves, may have no carcinogenic effect; in concert with others, malignancy may occur. Such influence may be additive or multiplicative . . .

Second, animal studies generally are directed to the investigation of one agent; negative results may therefore be misleading insofar as actual work risk is concerned. Selikoff, \textit{Recent Perspectives in Occupational Cancer}, reprinted in \textit{Toxic Torts}, supra note 5, at 108-09. The powerful multiplying effect of the combination of two agents can be appreciated by examining the experience of asbestos insulation workers, demonstrated in the following table:
ers' deaths were attributable to asbestos exposure.\textsuperscript{45}

Indirect occupational exposure to asbestos is also hazardous. A recent study by Dr. Selikoff of the shipyard industry\textsuperscript{46} confirmed earlier findings in this country and France, Great Britain and the Netherlands.\textsuperscript{47} Workers in every trade involving exposure to asbestos exhibited abnormal lung X-rays.\textsuperscript{48} Approximately half the work-

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tr>
<td><strong>EXPECTED AND OBSERVED DEATHS OF LUNG CANCER AMONG</strong></td>
</tr>
<tr>
<td><strong>17,800 U.S. AND CANADA ASBESTOS INSULATION WORKERS,</strong></td>
</tr>
<tr>
<td><strong>JANUARY 1, 1967 — DECEMBER 31, 1972;</strong></td>
</tr>
<tr>
<td><strong>RELATION OF CIGARETTE SMOKING</strong></td>
</tr>
</tbody>
</table>

| Smoking habits not known | 6144 | 16.76 | 94 | 5.6 |
| History of cigarette smoking | 9590 | 31.60 | 179 | 5.7 |
| No history of cigarette smoking | 2066 | 7.51 | 2 | 0.3 |
| Never smoked | 1457 | 4.40 | 1 | 0.2 |
| History of pipe and/or cigar only | 609 | 3.11 | 1 | 0.3 |

\textsuperscript{45} School Study, \textit{supra} note 35, at 3. Selikoff studied 307 consecutive deaths (1943-1964) among asbestos insulation workers in New York and New Jersey and found four with pleural mesothelioma and six with peritoneal mesothelioma, an extraordinarily high occurrence for this type of tumor. There were no cases of mesothelioma in the absence of asbestosis.

As part of the study, Selikoff undertook an investigation of the type of exposure to asbestos that each of the seven autopsied mesothelioma cases had encountered. Six of the seven men with mesothelioma in the autopsy series had histories of prolonged employment in the asbestos industry. However, the seventh man, employed as a carpenter in the construction industry, had no known exposure; prior to his death he denied ever having seen or handled any asbestos product. Selikoff, \textit{Relation Between Exposure to Asbestos and Mesothelioma}, 272 New Eng. J. Med. 560 (1965). Three hundred thirty-nine of the three hundred ninety-two men with more than twenty years experience as asbestos insulators developed asbestosis. \textit{Id.} at 561. \textit{See also} Selikoff, \textit{Asbestos Exposure and Neoplasia}, 188 J.A.M.A. 22 (1964).

\textsuperscript{46} \textit{See generally} Shipyards, \textit{supra} note 21.


\textsuperscript{48} \textit{Shipyards, supra} note 21, at 93.
ers examined showed X-ray changes similar to those regularly seen following direct or indirect occupational exposure to asbestos. In addition, even without showing any X-ray changes many workers may have had asbestos exposure sufficient to cause death from mesothelioma.

Environmental exposure to asbestos has also been shown to cause disease. Mesothelioma can occur among people whose asbestos exposure consists solely of having resided near an asbestos factory or in the household of an asbestos worker. A recent study of the effects of household exposure was conducted at the Mount Sinai School of Medicine. In the clinical survey of family contacts of

49. Id.
50. Id. at 92.
51. Id. at 87. Asbestos has been found to be a contaminant of ambient air. A study of air samples collected in forty-eight United States cities during 1969 to 1970 showed chrysotile asbestos to be present in virtually all metropolitan areas. This form of asbestos was used to fireproof highrise buildings, frequently by spraying. The practice was especially common in New York City.

During the latter part of the 1960s, procedural regulations in New York City and elsewhere were enacted to control the spraying of asbestos at construction sites. As these were found ineffective, the spraying of asbestos materials was prohibited by several cities and states in 1970 and 1971 (e.g., Boston, New York, Philadelphia and Illinois) and nationwide by the United States Environmental Protection Agency in 1972. See also School Study, supra note 35, at 18.

Nicholson studied the flaking asbestos material in New Jersey schools where it had been applied to walls, ceilings and other surfaces for insulation or decorative purposes. The study found asbestos present in more than ten percent of the New Jersey schools, and many had visible damage "indicating the potential scope of the environmental asbestos problem." Id. Similar materials were found in schools in New York, Massachusetts, California, and other states indicating a possible health problem nationwide. Various control measures were proposed including complete removal of the asbestos material, covering them with a sealant, or enclosing them with other building materials. Id. at 12.

Another study by Nicholson indicated that asbestos had been used extensively in Puerto Rico for both schools and homes. Recommendations, following the finding that there was significantly elevated air concentrations following manipulation of the asbestos cement materials used in the construction of the buildings, included informing all homeowners of the risk involved and providing special equipment to any homeowner on a loan basis by a federal agency should the homeowner wish to remodel in any way. The recommendation for further study of the high concentration of asbestos in the schools was made "with considerable urgency." Nicholson, Chrysotile Asbestos in Air Samples Collected in Puerto Rico, Report to the Consumer Products Safety Commission, March 16, 1978. Concern over asbestos in New York City schools has increased. David Wirtz, spokesman for the Board of Education, stated that its lawyer would investigate the possibility of recovering the money which will be spent to solve the asbestos problem in schools. N.Y. Post, Nov. 13, 1978, at 1, cols. 1-5.

former asbestos factory workers, 36.2 percent of the family members showed X-ray abnormalities characteristic of asbestos exposure.\textsuperscript{53}

Exposure to asbestos and the occurrence of clinical illness are frequently twenty or more years apart.\textsuperscript{54} In the insulation worker studies, the majority of the mesothelioma cases were found thirty years after the initial exposure to asbestos.\textsuperscript{55}

Even brief exposure to asbestos can increase the risk of cancer years later.\textsuperscript{56} Dr. Selikoff stated, "'A worker could be exposed heavily to asbestos for even one day and conceivably develop cancer much later in life as a result of this exposure. He may have been exposed for only one day, but his lungs continue to be exposed to the asbestos deposited there.'"\textsuperscript{57}

Industry has tried to reduce publicity concerning asbestos health hazards. In October of 1964, the New York Academy of Sciences sponsored an international conference on the Biological Effect of Asbestos which was attended by more than four hundred scientists.\textsuperscript{58} Immediately thereafter, a letter was sent to the executive director of the Academy by lawyers representing the Asbestos Textile Institute, an association of asbestos manufacturers that includes Johns-Manville Corporation, Raybestos-Manhattan, Inc., and Uniroyal, Inc.\textsuperscript{59} The letter expressed concern over recent articles carried in local and national newspapers concerning mesothelioma and stated that "unwise treatment of research data in public discussions could cause reactions which were not justified by the state of scientific knowledge."\textsuperscript{60}

The concern over asbestos hazards has now prompted considerable publicity on television, radio and in the newspapers.\textsuperscript{61} The government has even enclosed a warning on these hazards in Social Security checks.\textsuperscript{62}

\textsuperscript{53} Id. See also Newhouse & Thompson, Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area, 22 BRIT. J. INDUS. MED. 261 (1965).

\textsuperscript{54} Shipyards, supra note 21, at 87; School Study, supra note 35, at 4.

\textsuperscript{55} Shipyards, supra note 21, at 87; School Study, supra note 35, at 4.

\textsuperscript{56} CANCER AND THE WORKER, supra note 8, at 37.

\textsuperscript{57} Id.

\textsuperscript{58} BRODEUR, supra note 22, at 15.

\textsuperscript{59} Id. at 17.

\textsuperscript{60} Id.


\textsuperscript{62} U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, ABOUT ASBESTOS (September
Industry now attempts to minimize the medical risks by challenging the studies which have been conducted and the conclusions which have been reached. In October 1978 the American Industrial Health Council (AIHC) issued a "Reply" to the government's recent statements concerning the incidence of cancer associated with occupational exposure to hazardous substances, including asbestos. The AIHC criticized the government's "selective use of data, which was often outdated and of questionable scientific validity."

B. Government

Early studies of asbestos exposure led to enactment of regulations in England in 1933. By contrast, the United States did not enact any protective regulations until 1969.

The first recommendation for an asbestos standard in the United States was made in 1938. Based on a survey of employees in textile mills, the standard was intended to prevent asbestosis. At the time, no substantial evidence existed linking asbestos exposure with cancer. The standard proposed was five million particles per cubic foot (mppcf).

There were major problems with the proposed standard. All particles longer than one micron were counted, including non-asbestos fibers. The number of asbestos fibers to total particles varied, lim-
iting the utility of the proposed standard. Also, the standard was not based on an appropriate population survey. Only 541 employees were studied, and the majority had less than ten years of asbestos exposure. Only three employees surveyed were known to have worked with asbestos more than twenty years, long enough to have manifested symptoms of asbestosis. A large number of workers had been discharged prior to the survey “because of the possibility that they might be suffering from asbestos disease.”

The five mppcf standard, based on individuals subject only to short-term exposure, survived as the standard for more than thirty years in the United States. The American Conference of Governmental Industrial Hygienists (ACGIH) adopted the standard in 1948. In 1968 the standard became legally enforceable for those industries to which the Walsh-Healy Act applied (manufacturers selling more than $10,000 worth of material to the government).

In 1968 the British Occupational Hygiene Society (BOHS) proposed a standard which required the counting of fibers between five and ten microns. The presence of two fibers per cubic centimeter (2 f/cm³) required the employer to institute some control measures.

The standard was based on a study which reviewed X-rays of 290 factory workers and the fiber concentrations to which these men exposure.

72. The percentage of asbestos fibers ranged from twenty-six percent in weaving, to as low as one percent in crushing operations (the figures were estimates of the number of asbestos and cotton fibers). Id.
73. Only thirteen percent of the work force surveyed had been exposed to asbestos for more than ten years. Id. at 152.
74. Id.
75. Id. Although the standard was “specified” as tentative, the opinion was expressed that if the asbestos dust concentration was kept below the five mppcf level, new cases of asbestosis would not appear. Id.
76. Id. at 153. Two years earlier the standard was adopted into the ACGIH list of Maximum Allowable Concentration Values. Id. The ACGIH was not a government agency but a voluntary organization of individuals from various groups, including the asbestos industry, with the self-exposed task of recommending safety standards. BRODEUR, supra note 22, at 10-11. Although ostensibly an unbiased scientific committee, the ACGIH was in fact organized and run by one man, Dr. Herbert Stockinger, chief of toxicology at the National Institute of Occupational Safety and Health (NIOSH). Stockinger selected the members for the ACGIH committee. R. SCOTT, MUSCLE AND BLOOD 190-91 (1974).
78. TLV, supra note 11, at 154.
79. Between 2 f/cm² and 12 f/cm², control measures commensurate with the exposure circumstances (time and frequency of worker exposure) were prescribed. Above 12 f/cm², full application of control measures, including respiratory protection, was mandatory. Id. at 154.
were exposed.\textsuperscript{80} Noteworthy in the 1966 data was the preponderance of individuals with short-term exposure to asbestos. Over half of the men studied worked with asbestos for less than twenty years.\textsuperscript{81} Also, the dust concentration levels to which the employees ostensibly were exposed were supplied by the companies.\textsuperscript{82} Although there was medical knowledge in both England and the United States by 1968 which indicated asbestos was carcinogenic, the BOHS standard was intended to prevent only asbestosis. The Society could not specify an air concentration level which would protect the worker from cancer because no quantitative data existed which would permit the setting of such a standard.\textsuperscript{83}

In the United States, a federal standard of twelve f/cm\textsuperscript{3} was enacted in 1969.\textsuperscript{84} In 1971 the Secretary of Labor under the Occupational Safety and Health Act (OSHA) of 1970 proposed a “twelve fiber” standard.\textsuperscript{85} By the end of the year a “temporary emergency standard” of “five fibers” (5 f/cm\textsuperscript{3}) was enacted.\textsuperscript{86} Both standards required the counting of fibers longer than five microns.

Five fibers per cubic centimeter means five million fibers per cubic meter of air, and a worker inhales about eight cubic meters in a working day.\textsuperscript{87} An employee could also inhale millions of asbestos fibers shorter than five microns without the employer violating the OSHA standard. Although it was technologically feasible as early as 1940 to measure particles as small as one micron,\textsuperscript{88} at the time the original OSHA standards were enacted it was believed that

\textsuperscript{80} Clinical and X-ray data were supplied by the medical director of the asbestos factory and were reviewed by the Society. However, at the time there were no specific standards for reading X-rays, and the medical director of the factory, not the members of the Society, read and interpreted the X-rays. Nicholson Interview, \textit{supra} note 25.

\textsuperscript{81} Only 118 of 290 workers had been exposed to asbestos for more than twenty years. \textit{TLV}, \textit{supra} note 11, at 154.

\textsuperscript{82} The dust concentration levels were estimates provided by the company. \textit{Id.}

\textsuperscript{83} \textit{Id.}

\textsuperscript{84} The standard was expressed in terms of twelve fibers per milliliter (12 f/ml) greater than five microns in length. \textit{Id.} This is equivalent to twelve fibers per cubic centimeter and 2 mppcf. \textit{Id.}

\textsuperscript{85} \textit{Id.} It has been said that OSHA vests decision-making power of a legislative type in the Secretary of Labor and that where there is insufficient data to make a fully informed factual determination, decision making must depend to a great extent on policy judgments. Economic feasibility for compliance is a factor which can be considered. Industrial Union Dep't, AFL-CIO v. Hudgson, 499 F.2d 467 (D.C. Cir. 1974).

\textsuperscript{86} \textit{TLV}, \textit{supra} note 11, at 154. See also 29 C.F.R. § 1910.1001(b)(1) (1977).

\textsuperscript{87} See \textit{Cancer and the Worker}, \textit{supra} note 8, at 56.

\textsuperscript{88} See note 71 \textit{supra} and accompanying text.
the smaller fibers would not be retained in the lungs and therefore would not cause asbestosis. These shorter fibers are now known to cause asbestosis and cancer. The 1972 permanent standard required a reduction in 1976 to two fibers (2 f/cm$^3$). A still lower standard was proposed in 1975 as a result of the medical literature indicating the carcinogenic characteristic of asbestos. The standard proposed in 1975 by OSHA was 0.5 fibers. The National Institute for Occupational Safety and Health (NIOSH) recommended a 0.1 fiber standard. Even the 0.1 fiber standard means that a worker will inhale about 800,000 fibers longer than five microns in a working day.

One exposure to asbestos can conceivably cause injury. There appears to be no level of exposure which is completely safe. At any level above zero, "there will be some risk associated with the exposure to asbestos. . . ." Therefore, the consensus in the medical community is that asbestos dust levels should be kept as low as technologically feasible.

OSHA has two methods for controlling the amount of asbestos to which an employee is exposed. First, handling procedures are specified: cleanup of asbestos dust by local exhaust ventilation and dust collection systems, collection and disposal of asbestos waste in sealed bags or other containers, the use of special clothing to pre-

90. CANCER AND THE WORKER, supra note 8, at 37.
92. In 1975 OSHA issued a notice of proposed rule making which would again reduce the permissible exposure to asbestos; the level proposed was 0.5 asbestos fibers per cubic centimeter for an eight hour time weighted exposure, with a ceiling exposure of 5 million asbestos fibers per cubic meter (5 asbestos fibers per cubic centimeter) for any period not exceeding 15 minutes. 40 Fed. Reg. 47,652 (1975).
93. CANCER AND THE WORKER, supra note 8, at 56.
94. Id.
95. Id. at 37.
96. TLV, supra note 11, at 165.
99. Id. (h)(2).
vent contamination, and wetting of asbestos material before handling.

Second, OSHA has been empowered to enforce its regulations. However, even if the standards set by OSHA were capable of protecting workers from asbestos-associated disease, the enforcement of the prescribed concentrations is still uncertain. About five million workplaces fall within its jurisdiction, but OSHA employs only 200 industrial hygienists. A quantitative assessment of the effectiveness of OSHA, state and industry monitoring in the construction industry was obtained during 1972. Each worker was asked about dust counts he had seen during his employment from June 7 through December 6, 1972, a period when the permanent asbestos standard required that at least one dust count be taken in each workplace using asbestos. Only 171 of 4,956 workers reported seeing a dust count at any time during this period.

100. Id. (d)(3).
101. Id. (c)(2)(i).
104. TLV, supra note 11, at 165.
105. Id. at 166 (table 9). The following table depicts the number of dust counts seen during a six month period when dust counts were to be obtained in each workplace using asbestos.

### TABLE 2

**QUESTIONNAIRE: OBSERVATION OF ASBESTOS STANDARD**  
**JUNE 7, 1972-DECEMBER 6, 1972**

<table>
<thead>
<tr>
<th>Region</th>
<th>Dust Counts Seen?</th>
<th>Percentage of Men Seeing a Dust Count</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>New York - New England</td>
<td>12</td>
<td>743</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>25</td>
<td>755</td>
</tr>
<tr>
<td>Southeast</td>
<td>6</td>
<td>326</td>
</tr>
<tr>
<td>Southwest</td>
<td>18</td>
<td>474</td>
</tr>
</tbody>
</table>
An employee is forced to rely on industrial compliance and on governmental enforcement of existing standards. At concentrations below the "five fiber" level it is not possible visually to detect asbestos. Therefore, the environment may be hazardous without the employee knowing it.

OSHA regulations also require caution labels to be affixed to all raw "materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers." The warnings, however, do not adequately inform a worker of the dangers to which he is exposed. The label is required to state only that "Breathing Asbestos Dust May Cause Serious Bodily Harm." Thus, a worker is not generally informed of the medical risks associated with asbestos exposure. He is also unable to detect when he is being exposed to a harmful concentration.

### Table 1

<table>
<thead>
<tr>
<th>Region</th>
<th>Frequency</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest</td>
<td>5</td>
<td>935</td>
<td>0.5</td>
</tr>
<tr>
<td>Central</td>
<td>18</td>
<td>740</td>
<td>2.4</td>
</tr>
<tr>
<td>West</td>
<td>24</td>
<td>509</td>
<td>4.5</td>
</tr>
<tr>
<td>Canadian</td>
<td>9</td>
<td>363</td>
<td>2.5</td>
</tr>
<tr>
<td>Maintenance Locals</td>
<td>23</td>
<td>38</td>
<td>37.7</td>
</tr>
<tr>
<td>Shipyard Locals</td>
<td>31</td>
<td>73</td>
<td>29.8</td>
</tr>
<tr>
<td>All Regions</td>
<td>171</td>
<td>4956</td>
<td>3.4</td>
</tr>
</tbody>
</table>

2. Work clothes and facilities

Facilities and supplies for clothes change were available:

<table>
<thead>
<tr>
<th>Availability</th>
<th>Frequency</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the time</td>
<td>(100%)</td>
<td>1291</td>
<td></td>
</tr>
<tr>
<td>Usually (50-75% of time)</td>
<td>940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasionally (1-49% of time)</td>
<td>872</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never (0%)</td>
<td>(0%)</td>
<td>1964</td>
<td></td>
</tr>
</tbody>
</table>

3. Respirators

Were provided by the employer:

<table>
<thead>
<tr>
<th>Availability</th>
<th>Frequency</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the time</td>
<td>(100%)</td>
<td>2038</td>
</tr>
<tr>
<td>Usually (50-75% of time)</td>
<td>1014</td>
<td></td>
</tr>
<tr>
<td>Occasionally (1-49% of time)</td>
<td>1242</td>
<td></td>
</tr>
<tr>
<td>Never (0%)</td>
<td>(0%)</td>
<td>787</td>
</tr>
</tbody>
</table>

TLV, supra note 11, at 166 (table 9).


108. Id. § 1910.1001(g)(2) (1977). Illustration 1 is an example of a current asbestos label:

Illustration 1
ILLUSTRATION 1

CAUTION — ASBESTOS DUST HAZARD
Contains Asbestos Fibers — Avoid Creating Dust
Breathing Asbestos Dust May Cause Serious Bodily Harm

<table>
<thead>
<tr>
<th>CAUTION</th>
<th>IMPORTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do NOT Breathe Dust</td>
<td>DO Use Vacuum or Wet Cleaning Methods</td>
</tr>
<tr>
<td>Do NOT Use Air Hose for Cleaning</td>
<td>DO Dispose of Dust in Sealed Container</td>
</tr>
<tr>
<td>Do NOT Machine Without Dust Collection Equipment</td>
<td>DO Wear Mask if Unable to Avoid Dust</td>
</tr>
</tbody>
</table>

For Further Information Contact: Environmental Affairs Department.

In *Borel v. Fibreboard Paper Prod. Corp.*, evidence produced at trial indicated that since 1964 there were warning labels on the products of some of the defendants. The labels read substantially the same as the warnings on labels of asbestos-containing products today. "Inhalation of asbestos in excessive quantities over long periods of time may be harmful." 493 F.2d at 1104.

The court stated that the "cautions" did not indicate the gravity of the risk: "the danger of a fatal illness caused by asbestosis and mesothelioma or other cancers. The mild suggestion that inhalation of asbestos in excessive quantities over a long period of time 'may be harmful' conveys no idea of the extent of the danger." *Id.*

As the New York Academy of Sciences stated in *Cancer and the Worker*:

The issue of the worker's right to know was the basis of two recent cases brought to arbitration by the Oil, Chemical, and Atomic Workers' Union. In the first case, workers at a Ciba-Geigy agricultural products plant in McIntosh, Alabama, knew that some of the chemicals they worked with were dangerous and asked for a list of all chemicals they were exposed to. The company balked at this request, and after filing of grievances, the case went to arbitration.

In the second case, workers at an Arco polymers plant nears Pittsburgh knew the names of most of the chemicals they worked with and were aware that at least one was dangerous, because from time to time the company took blood tests to check for ill effects. However, when the workers wanted a physician other than the company doctor to take a look at the results to see how severe the health hazard was, the company doctor refused.

What the workers at Arco didn't know then was that the 'dangerous' chemical was benzene — a solvent that some 2 million American workers are exposed to, and to which *at least* 150 documented cases of leukemia in workers around the world are attributed. The Arco employees knew only that every so often the company doctor said a worker had to be transferred to another part of the plant until his white blood cell count returned to normal. They had no idea that benzene was suspected of causing cancer or how serious a risk they were running by working with this chemical.

The union argued before federal arbitration judges that workers could not participate meaningfully in collective bargaining, which involves assessing job health risks, without knowledge of the chemicals they worked with or the effects of those chemicals on their health. In both cases, the judge ruled in favor of the workers, establishing at last the worker's right to know — a victory long in coming. It is to be hoped that other workers through the country will soon hear of these decisions.

*Id.*, supra note 8, at 76-77.
Workers must be provided scientific information if they are going to have a say in their own protection. Absent such information they are incapable of participating in a standard-setting process. "[O]nce a standard is set, informed workers can ensure that it is properly enforced in their plants. . . . *Even workers who are informed about carcinogens cannot take action to protect themselves if they don't know the ingredients behind the trade names of the chemicals they work with.*"¹⁰⁹

C. *An Illustration: Tyler, Texas*

The history and practices at one asbestos factory will demonstrate the industry's disregard for worker health and the inadequacy of government inspections. The conditions at the Pittsburgh-Corning plant in Tyler, Texas have been well documented in the course of recent litigation terminated by a settlement awarding employees of the plant twenty million dollars.¹¹⁰

In 1918¹¹¹ the Union Asbestos and Rubber Plant began operations in Chicago, Illinois. Expanding rapidly, the company opened factories in Cicero, Illinois in 1926,¹¹² Paterson, New Jersey in 1940,¹¹³ and

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¹⁰⁹. *Id.* at 75-76 (emphasis in original).
¹¹⁰. For a complete history of the Tyler, Texas plant, see Brodeur, *supra* note 22. The approximate apportionment was: United States Government, $5.7 million; the Mining Company, $5.2 million; PPG Group (Pittsburgh Plate Glass and Corning), $8 million; and Union Asbestos & Rubber, the prior owner of the plant, $1 million. The three theories alleged against the Government in the complaint were:
(1) liability as a supplier;
(2) failure to inform the employees of the hazardous conditions in the plant found by the Public Health Service;
(3) failure by the Department of Labor to enforce the provisions of the Walsh-Healy Act.

Telephone interview with Fred Baron, counsel for plaintiffs (August 15, 1978).

¹¹¹. According to the United States Bureau of Labor Statistics, American and Canadian Insurance companies were even then generally declining to insure asbestos workers because of the assumed hazardous conditions of the asbestos industry. Brodeur, *supra* note 22, at 6.

¹¹². The plant in Cicero manufactured asbestos textiles, insulation materials, packings, brake linings, gaskets, and a variety of rubber products. *Id.*

¹¹³. In the mid-thirties the company developed an amosite-asbestos pipe insulation for the Navy. Amosite is a variety of asbestos found in large deposits in South Africa. It had never been used before in the United States, where most asbestos products had been and continue to be made of chrysolite. Because amosite is as heat resistant as chrysolite, and can be purchased more cheaply, amosite was chosen for insulating pipes, turbines, and boilers of modern warships, and by 1940 the Navy's demands were such that the Patterson plant was opened. *Id.* at 6-7.
McGregor, Texas in 1949. In 1954, as part of a consolidation program, the company shut down the Paterson and McGregor factories and opened one in Tyler, Texas which produced asbestos pipe covering. In 1962 the plant was sold to the Pittsburgh-Corning Corporation which is a joint venture of the Pittsburgh Plate Glass Company (PPG) and the Corning Glass Works.

In 1963, the new owners asked the Industrial Hygiene Foundation of America to evaluate the asbestos hazard there. In its report the foundation made no mention of any health hazard, assuring the company that with the exception of a few areas, the number of asbestos fibers in the air was within the currently acceptable standard.

In 1966 another survey of the Tyler plant was conducted. The safety and industrial engineer for the glass division of PPG reported that asbestos fiber counts exceeded the standard in seven of sixteen samples. He recommended better ventilation equipment and better maintenance of the ventilation system. The engineer's report did not indicate that workers at the Tyler plant were breathing concentrations ten times greater than the recommended safety standard which supposedly protected them from asbestosis.

Numerous inspections of the Tyler plant occurred between 1963 and 1969, with no significant changes being made in the exposure levels in the plant. In February of 1969, still another safety and

114. *Id.* at 7.
115. *Id.*
116. *Id.* at 10.
117. The Industrial Hygiene Foundation described itself as “an association of industries for the advancement of healthful working conditions” and was totally financed by industry. *Id.* at 10.
118. In 1946 the American Conference of Governmental Industrial Hygienists adopted a threshold limit value of five million particles per cubic foot of air (mppcf). The authors of the Foundation report appear to have based their conclusions on the erroneous assumption that the threshold limit value of five mppcf meant five million asbestos fibers. The proponents of the standard has meant the threshold value to apply to all particulate matter—fibrous and nonfibrous—in a given cubic foot of air. *Id.* at 10-11.
119. *Id.* at 11.
120. *Id.* at 12.
121. During six and a half years, five separate studies and inspections of the factory had been conducted, and more than a hundred samples of air had been gathered and transported to laboratories in various parts of the country, where they had been counted, weighed, assayed, and painstakingly analyzed. The findings were reported in various technical terms, but never in terms of what the dust and fibers might be doing to the workers' health. *Id.* at 27-28.
health inspection of the factory was conducted, this time by the industrial hygiene engineers from the United States Department of Labor's Wage and Labor Standards Administration. No alterations in the ventilation system were mandated by the inspectors despite a finding of unsatisfactory conditions in various areas of the plant and the enforcement powers granted to the Department by the Walsh-Healy Act. Instead, the Department recommended the company employ professional advisors to study the system or "present qualified proof that the present system is operating within the minimum specified ventilating range." Rather than reinspect the Tyler plant, the Department of Labor simply took the word of Pittsburgh-Corning that approved respirators would be issued to its employees and that the ventilation system would be improved. Employees of the Tyler plant did not wear respirators until at least 1971, despite Pittsburgh-Corning's assertion to the contrary.

In 1972, Pittsburgh-Corning decided to close the Tyler plant rather than improve conditions as required by OSHA. Sixty-three workers were employed at the plant when it closed in February, but eight hundred thirty-two other men were employed in the factory during its seventeen years of operation and were therefore exposed to the asbestos fibers. Prior to trial, a twenty million dollar settlement was reached, resulting in compensation for many of these employees. The major problems encountered in asbestos litigation which do not result in settlement are discussed in the following section.

III. Current Litigation

A. In General

Over 1,000 lawsuits have been filed in the United States by indi-
individuals injured as a result of asbestos exposure. This number is likely to increase as individuals exposed in the 1940s, 1950s and 1960s begin to manifest symptoms of asbestos disease. Theoretically, individuals who may maintain a suit as a result of their exposure and injury include: (1) miners, \(^{130}\) (2) factory workers who manufacture an asbestos product, \(^{131}\) (3) workers who install or use an asbestos product (insulation workers, construction workers and garage mechanics), \(^{132}\) (4) family members of asbestos workers who have been exposed to dust brought home on clothing, \(^{133}\) and (5) individuals working in the vicinity of an asbestos factory or industry.

130. But see note 135 infra.

131. See pt. II(C) supra.


133. Gray v. General Dynamics, H-75-327 (D. Conn., filed July 30, 1978) Household contamination by dust brought home by workers has affected family members as illustrated in Table 3 and Table 4.

### TABLE 3

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wives</td>
<td>83</td>
<td>25%</td>
</tr>
<tr>
<td>Daughters</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Sons</td>
<td>70</td>
<td>188</td>
</tr>
<tr>
<td>Sisters</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Brothers</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Mother</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>Cousins, etc.</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>
where there were airborne asbestos fibers.\textsuperscript{134}

Individuals occupationally exposed to asbestos are barred from suing their employers because of workers' compensation statutes.\textsuperscript{135}

\begin{table}
\centering
\caption{X-Ray Abnormalities Among 326 Household Members of Amosite Asbestos Workers}
\begin{tabular}{ll}
\hline
X-Ray Findings & Number of Household Members \\
\hline
Pleural thickening the only abnormality & 42 (13\%) \\
Pleural calcification the only abnormality & 7 (2\%) \\
Pleural thickening and pleural calcification & 3 (1\%) \\
Irregular opacities the only abnormality & 35 (11\%) \\
Irregular opacities, pleural thickening and/or pleural calcification & 27 (8\%) \\
\hline
Total & 114 (35\%) \\
\hline
\end{tabular}
\end{table}

\textit{Toxic Torts, supra} note 5, at 149 (table vi, table vii).

\textsuperscript{134} See notes 36-38 & 51 \textit{supra} and accompanying text.

\textsuperscript{135} A complete discussion of workers' compensation and product liability in the workplace may be found in Weisgall, \textit{Product Liability In The Workplace: The Effect of Workers Compensation on the Rights and Liabilities of Third Parties}, 1977 Wis. L. Rev. 1035 (1977). The article discusses the bases of workers' compensation systems, third party suits and the exclusivity provisions of workers' compensation statutes, and the effect of product liability litigation on third party actions. Two possible solutions are proposed: allow manufacturers to bring actions for contribution or indemnification against allegedly negligent employers and establish workers' compensation as the employee's sole source of recovery for workplace injuries. \textit{See generally id. at 1060-80.}


One of the most common types of restrictive provisions bars claims unless the disability or death occurs within a specified number of years after a specified event, such as the last day of work for the particular employee, or the last day of injurious exposure. Larson, \textit{supra} at 112. \textit{See, e.g., Utah Code Ann. \$ 35-2-13 (Supp. 1973); Colo. Rev. Stat. \$ 8-60-111 (1973). See also Graber v. Peter Lametti Constr. Co., 293 Minn. 24, 197 N.W.2d 443 (1972); Bethlehem Steel Co. v. Gray, 4 Pa. Commw. Ct. 590, 288 A.2d 828 (1972).}
Therefore, they must seek compensation from the asbestos manufacturers. On the east coast the first of nearly one hundred lawsuits charging asbestos manufacturers with endangering the workers at the Groton shipyard is scheduled to start trial in April, 1980.136 On the west coast, a one billion dollar class action lawsuit has been filed charging the fifteen major asbestos manufacturers with conspiracy to conceal and to distort reports on the hazards of asbestos.137

The typical plaintiff in current asbestos litigation is either an insulation worker, a pipecoverer, or a construction worker. He has

136. The Norwalk, Conn. Hour, Nov. 2, 1978, at 19, col. 1. In cases such as this, where an asbestos manufacturer complied with government specifications concerning the product manufactured, he may use that compliance as a defense.


Although no court has been confronted with this defense in an asbestos-disease case, the defense has been recognized in other contexts. Sanner v. Ford Motor Co., 144 N.J. Super. 1, 364 A.2d 43 (1976), aff'd, 154 N.J. Super. 407, 381 A.2d 805 (1977) (vehicle manufactured in strict compliance with army plans and specifications). See also Hunt v. Blasius, 55 Ill. App. 3d 14, 370 N.E.2d 617 (1977) (highway exit sign pole designed and installed according to state specifications).

At least one manufacturer which supplied products to the Government according to government specifications plans to seek indemnity and contribution from the government with respect to any claims filed or settled. The manufacturer seeks to recover damages and costs incurred by it as a result of: (a) the sale of products which contain asbestos fibers supplied by the United States of America, (b) supplying products containing asbestos fibers as required by specifications issued by the United States of America and (c) the employment by the United States of America of persons allegedly exposed to products containing asbestos fibers at ship construction and repair facilities, aboard vessels and at other facilities, including non-naval facilities.


usually worked for different employers and been exposed to asbestos fibers from different products.\textsuperscript{138} There is usually a period of twenty to thirty years between the time the worker initially inhales asbestos fibers and the date he manifests symptoms of asbestos disease.\textsuperscript{139} Therefore, it is virtually impossible for a plaintiff to determine with specificity which asbestos product manufacturer is responsible for his injury.\textsuperscript{140}

B. Statute of Limitations

A major impediment to claims by persons injured as a result of asbestos exposure is the application of a statute of limitations. Since asbestos diseases frequently take twenty to thirty years to manifest themselves,\textsuperscript{141} a statute of limitations which begins to run when the plaintiff is exposed to the product bars a plaintiff from suit before he is aware of an injury.\textsuperscript{142}

As early as 1949 the Supreme Court recognized the inequity of barring a plaintiff from suit if he was diligent in pursuing his legal remedies. In \textit{Urie v. Thompson}\textsuperscript{143} the plaintiff sued for compensation under the Federal Employers' Liability Act. Noting the long latent period between exposure to silica dust and manifestation of the plaintiff’s disease, the Court held that the date the plaintiff discovered the disease commenced the running of the statute of limitations.\textsuperscript{144}

The essential issue is whether injury to the plaintiff occurs at the time of contact with the product or at the time the plaintiff mani-
fests the asbestos disease. This distinction is important in asbestos litigation because twenty or more years may elapse between initial exposure and manifestation of symptoms. In states where date of first exposure begins the running of the statute of limitations, all plaintiffs are effectively precluded from maintaining an action. In those states where the date of last exposure commences the running of the statute, individuals who do not discover their asbestos disease within the limitation period are barred from suit. This strict accrual rule becomes an overwhelming burden to the asbestos plaintiff who could not have learned of his illness within the limitation period.

The primary justifications utilized by courts which continue to apply an exposure rule are that some damage to the plaintiff occurred on the date of exposure, and that the legislature has not applied a discovery rule to actions involving inhalation of a hazardous substance. Courts frequently perpetuate statute of limitations

145. See text accompanying notes 54-55 supra.
146. New York is representative of those jurisdictions which adhere to the traditional doctrine that the cause accrues at the time the plaintiff is first exposed to the product. The "first breath" doctrine was first enunciated by the New York Court of Appeals in Schmidt v. Merchants Despatch Transp. Co., 270 N.Y. 287, 200 N.E. 824 (1936). Schmidt contracted pneumoconiosis (a disease of the lungs) as a result of inhaling dust during the course of his employment. The court stated, "The injury occurs when there is a wrongful invasion of personal or property rights and then the cause of action accrues." Id. at 300, 200 N.E. at 827. For a discussion of the discovery rule in products cases, see Birnbaum, "First Breath's" Last Gasp: The Discovery Rule in Products Liability Cases, 13 Forum 279 (1977). See also Proewig v. Zaino, N.Y.L.J., Oct. 25, 1976, at 16, col. 2 (radioactive phosphorous caused leukemia nine years later and the statute of limitations was applied to bar the suit).


148. Id. at 290.
149. In a recent asbestos case, the United States District Court for the Eastern District of Virginia noted the inequity of commencing the running of the statute of limitations upon the last exposure of the plaintiff to the asbestos product but refused to alter the rule. The court called on the legislature to modify the rule. Bailey v. Johns-Manville Corp., C.P. No. 77-1, at 15 (E.D. Va. March 30, 1978).

The applicable Virginia codes state:
§ 8.01-243. Personal action for injury to person or property generally.—

A. Unless otherwise provided by statute, every action for personal injuries, whatever the theory of recovery . . . shall be brought within two years next after the cause of action shall have accrued.

rules without analyzing the underlying considerations and their applicability to asbestos cases, even when they recognize the inequity of barring a plaintiff from suit prior to the time when he could have learned of his illness.\textsuperscript{150}

The policy of not permitting a plaintiff to bring an action many years after he is aware of his injury is intended to promote diligence in pursuing legal remedies.\textsuperscript{151} A plaintiff who commences litigation within a limitation period after discovery cannot be said to be "sleeping on his rights." Until a plaintiff has manifested symptoms of asbestos disease, he cannot successfully maintain an action to recover for his injury. A discovery rule rather than an exposure rule effectively promotes diligence without penalizing the plaintiff whose injury does not occur immediately.

The policy of permitting a defendant to "close his books" is primarily equitable.\textsuperscript{152} When a defendant knowingly exposes individu-

\textsuperscript{150} § 8.01-230. Accrual of cause of action.—
In every action for which a limitation period is prescribed, the cause of action shall be deemed to accrue and the prescribed limitation period shall begin to run from the date the injury is sustained in the case of injury to the person, when the breach of contract or duty occurs in the case of damage to property and not when the resulting damage is discovered.

\textit{Id.} § 8.01-230 (1977 Replacement Volume).

\textsuperscript{151} Bassham v. Owens-Corning Fiber Glass Corp., 327 F. Supp. 1007, 1008 (D.N.M. 1971). The diseases which result from radiation exposure are analogous because they may not be discovered until years after the exposure or "radioactive impact." In fact, until the disease becomes manifest, the victim may have no realization of the radiation. Lambert, \textit{Atomic Energy, Nuclear Accidents}, 20 ATLA L.J. 340 (1977)(author calls for federal statute adopting "discovery rule" providing that suit may be brought within reasonable time after disease or disability is discovered or should have been discovered in exercise of reasonable care). \textit{See also} Estep & Van Dyke, \textit{Radiation Injuries: Statute of Limitations Inadequacies in Tort Cases}, 62 Mich. L. Rev. 753 (1964); Moore, \textit{Radiation and Preconception Injuries: Some Interesting Problems in Tort Law}, 28 Sw. L.J. 414 (1974); Rheingold, \textit{Solving Statutes of Limitations Problems}, 4 Am. Jur. Trials 441 (1966).

\textsuperscript{152} Judge Miles W. Lord, in his charge to the jury in \textit{Karjala}, stated:
Now, with regard to the statute of limitations, the law requires that Mr. Karjala bring his claim to court within six years of the date his claim arises. That is, in order to avoid stale claims, in fairness to the defendant, you shouldn't be able to have a claim
als to a hazardous product with knowledge that claims will be brought many years after the marketing of the product, he should not be permitted to close his books until individuals injured can bring their claims.

As early as 1933 the asbestos industry was aware that exposure to asbestos was likely to cause asbestosis many years after initial exposure. By 1955 there was evidence that exposure to asbestos could also cause cancer many years after initial exposure. Therefore, asbestos manufacturers should have recognized at least twenty years ago that claims for compensation might be brought against them many years after an individual was exposed to their products.

Also underlying an exposure statute of limitations rule is the belief that litigation should be precluded if essential witnesses or evidence are likely to have disappeared. In asbestos litigation the asbestos fibers remain in the body and can be clinically substantiated. Diagnosis of injury does not generally occur until twenty or more years after initial exposure and therefore there is no evidence of injury available until manifestation of illness. Thus, not only is passage of time necessary for manifestation of injury but it is necessary to prove the plaintiff’s claim. Evidence is not rendered unreliable by the passage of time but rather accumulates once diagnosis is made.

In some jurisdictions an exception to the exposure rule has been recognized where a foreign object is involved. Foreign objects and sort of lay in the weeds and wait and wait and wait and then bring it. The defendant might not have any idea what it is about at that time. But they assume that six years is a fair time to wait, and that is what they say, you can’t bring it after six years.

His claim arises when the harm to his person becomes evident. However, contracting asbestosis is not a matter of moment, or an occasion, but something which develops over a long period of time. The statute doesn’t commence to run against Mr. Karjala until he has contracted the disease of asbestosis, and the process of contracting the disease does not cease until physical impairment manifests itself.

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523 F.2d at 159 n.7.
153. Borel, 493 F.2d at 1083-84; Karjala, 523 F.2d at 157. See generally pt. II(A) supra.
154. See note 151 supra.
155. Prior to manifestation of illness, a plaintiff may be unaware that he has been exposed to asbestos fibers especially in indirect occupational and environmental exposure cases. Once diagnosis has been made, clinical evidence of injury as well as medical testimony become available.

156. In some jurisdictions the statute begins to run from time of discovery when a foreign object has been introduced into the body. See, e.g., Melnyk v. Cleveland Clinic, 32 Ohio St. 2d 198, 201, 290 N.E.2d 916, 918 (1972); N.Y. Civ. PRAc. LAW § 214-a (McKinney Supp. 1977).
which have been introduced into the body include not only surgical instruments but also oral contraceptives and other prescription drugs. Prescription drugs are intentionally introduced into the body and it is only in rare circumstances that the drug results in injury rather than benefit. Asbestos fibers are foreign to the human body in the same way a surgical instrument is foreign: neither is beneficial when it remains in the body.

A number of different rationales have been used by the courts when they seek to permit a plaintiff to use discovery of the foreign object as the date on which the statute of limitations begins to run. Some courts deem the foreign object to be a "continuing negligence." Others recognize the certainty of proof which results when a foreign object is left in the body.

A discovery rule should be applied in asbestos litigation for the same reasons that the discovery rule is applied in foreign objects cases. Asbestos fibers which remain in the body can be detected by chest X-rays, biopsies and autopsies, eliminating the possibility of


In one oral contraceptive case the plaintiff manifested her first symptoms in December of 1968, but they were not positively diagnosed until February of 1969. The district court found that plaintiff discovered that defendant's drug caused her injury in June of 1967 (date of last exposure) and that her action was barred. Goodman v. Mead Johnson & Co., 388 F. Supp. 1070 (D.N.J. 1974). The court of appeals reversed, stating that although plaintiff knew she had some injury in 1967 and that there might be a relationship to her use of the birth control pill, that knowledge was not sufficient to put her on notice that she had an actionable claim against the manufacturer. Thus, the statute of limitations in Goodman commenced when there was an awareness of three factors: manifestation of injury, physical causal link between the injury and the product and an actionable claim. Goodman v. Mead Johnson & Co., 534 F.2d 666 (3d Cir. 1976), rev'd 388 F. Supp. 1070 (D.N.J. 1974).


See W. PROSSER, HANDBOOK OF THE LAW OF TORTS § 31, at 144, and cases cited therein [hereinafter cited as PROSSER].
fraudulent claims in asbestos litigation. Also, it is not possible to determine with certainty the date when the asbestos fibers caused the injury because the fibers which remain in the body continue to do damage as long as they are present.\textsuperscript{161} Thus, it is possible to term asbestos exposure a "continuing negligence."

Even a discovery rule must be read broadly in asbestos cases because there is frequently a question concerning the date of injury. This problem is well illustrated by the facts in \textit{Karjala v. Johns-Manville Products Corp.}\textsuperscript{162} The plaintiff had been employed as an installer of asbestos insulation between 1948 and 1966.\textsuperscript{163} In 1959 Karjala experienced shortness of breath, a loss of appetite, and general weakness. Not until 1966, however, was a definitive diagnosis of asbestosis made. Karjala filed an action in 1971 against several manufacturers of asbestos insulation.\textsuperscript{164}

The Eighth Circuit Court of Appeals looked to the time when Karjala could bring his claim without dismissal for failure to state a claim. In determining this date the court considered the date of manifestation of illness which could be shown to have been caused by an act or omission for which the defendant could be liable.\textsuperscript{165} Recognizing that contracting asbestosis was not a "matter of moment" but occurred over a long period of time, the trial court charged that the symptoms experienced in 1959 did not necessarily commence the running of the statute of limitation.\textsuperscript{166} The jury was left to decide when the disease had progressed to a stage where Karjala would have a provable claim for injury.

One rule which would accommodate discrepancies in date of first symptoms, date of permanent injury, and date of diagnosis (including the cause of the injury), is to commence the running of the statute of limitations when the plaintiff discovers, or in the exercise of reasonable diligence should have discovered, not only that he has been injured but that his injury is caused by the defendant's conduct.\textsuperscript{167} Application of such a rule means that an individual

\begin{itemize}
  \item 161. \textit{Borel}, 493 F.2d at 1083.
  \item 162. 523 F.2d 155 (8th Cir. 1975).
  \item 163. \textit{Id.} at 156.
  \item 164. \textit{Id.}
  \item 165. \textit{Id.} at 160.
  \item 166. \textit{Id.} at 159 n.7.
\end{itemize}
suffering from an asbestos-associated disease must maintain his suit within a limitation period after he discovers his injury and after he discovers that his exposure to asbestos is the probable cause of his injury.

C. Proof of Causation: The Multiple Defendants Problem

Persons suffering from asbestos-related disease may have been exposed to several different products containing asbestos. In many instances the plaintiff knows only the type of product, such as insulation material, and not the specific brand names or manufacturers. In some occupational exposure cases a worker may know at least some of the manufacturers who produced the asbestos-containing material.

There is usually more than one product and more than one manufacturer which may have been the cause of the asbestos injury. Neither of the two commonly used tests for causation is appropriate. The "but for" rule states that a defendant's conduct is not the cause of an injury if the injury would have occurred without it. The medical evidence does not enable a trier of fact to determine a defendant's liability using this rule because any single exposure can be the cause of asbestos disease. The alternative rule is that a defendant's conduct is the cause of the event if it was a substantial factor in bringing it about. However, it is impossible as a practical matter to determine which asbestos fibers caused the injury. Asbestos fibers from all of the products to which an individual is exposed remain in the lungs and work together to cause the injury. Therefore, the effects of asbestos exposure are also cumulative.

Utilization of the "but for" rule could result in all defendants escaping liability, whereas any product to which the individual was exposed could be the cause of the injury. In many cases, the plaintiff does not know the specific brand names or manufacturers of the asbestos products.


170. PROSSER, supra note 159, § 41, at 239.

171. See note 95 supra and accompanying text.

172. PROSSER, supra note 159, § 41, at 240.

173. See note 57 supra and accompanying text.
exposed may be said to be a substantial factor in causing either asbestosis or cancer, and thus all defendants may be held jointly and severally liable. The “but for” rule gives the defendants too easy an escape considering the knowledge which they had concerning health hazards of exposure to asbestos. The substantial factor test, while more equitable, is not the best solution.

Where there are two concurrent causes, the best solution in an asbestos case is to shift the burden of proof from the plaintiff to the defendant. This theory was first presented by the classic fact pattern in *Summers v. Tice*. In *Summers*, plaintiff’s two hunting companions fired their guns simultaneously in his direction. Only one of them could have fired the shot which injured him. Both defendants, however, were negligent. It was not possible for the plaintiff to ascertain which hunting companion was at fault. The court shifted the burden to the defendants and held both liable unless they could absolve themselves.

The *Summers* court clearly indicated that an injured plaintiff should not be precluded from recovering because he cannot identify the appropriate defendant. Although all possible defendants were named in the *Summers* case and this is not always possible in an asbestos case, the underlying policy effectuated by the *Summers* rule can be accomplished by permitting a plaintiff to name as many asbestos manufacturers as he believes caused his injury. The defendants should then have the burden of absolving themselves or be required to compensate the plaintiff.

In most instances this theory will also result in joint and several liability because the defendant manufacturers will not be able to prove that the plaintiff was not exposed to their product. However, all of the asbestos manufacturers knew or should have known that products containing asbestos were a potential health hazard, and as between the injured innocent plaintiff and the defendant, it is more equitable for the defendant to compensate the plaintiff than to escape liability.

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174. 33 Cal. 2d 80, 199 P.2d 1 (1948).
175. Id. at 86-87, 199 P.2d at 4-5. The court justified its decision on policy grounds: where defendants are all wrongdoers and their negligence has caused the situation in which the innocent plaintiff cannot identify which defendant caused the injury, fairness dictates that he should not be required to do so or go without remedy. Id.
176. Id.
As in *Summers*, defendants have better access to evidence of causation than do plaintiffs. Records concerning the types of products manufactured, the individuals who purchased them, and the amount of revenues earned are clearly more available to the defendant manufacturers than to the injured plaintiff. Therefore, "the wrongdoers should be left to work out between themselves any apportionment of damages."78

D. Collateral Estoppel

Although only a small portion of the hundreds of filed asbestos cases have been tried, one issue has repeatedly been litigated: knowledge of the medical hazards by the defendant asbestos manufacturers. Each plaintiff has had to prove that the asbestos manufacturer knew or should have known of the medical hazards associated with exposure to asbestos dust. There are potentially two million asbestos claims to be litigated in the next thirty years. Application of collateral estoppel in asbestos litigation would be a timesaving device dramatically reducing the burden on the court system for pending asbestos cases as well as for claims not yet filed.

The doctrine of collateral estoppel precludes a party from relitigating a fact in a later case when it has already been determined in a prior case. This doctrine is based on the principle of promoting the efficient and fair resolution of controversies. By precluding the relitigation of a fact, the doctrine ensures that once a fact is established in a previous case, it will not be re-litigated in subsequent cases, thus conserving judicial resources and avoiding unnecessary duplication of efforts.

The doctrine of collateral estoppel is established by the court finding that the prior case is final and that the matter has been litigated to a conclusion. It is applied when the fact at issue in the subsequent case has been finally adjudicated in the prior case and is material to the issue in the subsequent case. The doctrine is applicable when the parties in both cases are the same, the issue decided in the prior case is identical with the issue in the subsequent case and is necessarily decided in order to determine the rights of the parties in that case, and the subsequent case is within the res judicata jurisdiction of the court.
gating an issue that he has already had an opportunity to litigate, recognizing the purpose of a lawsuit as not only "to do substantial justice but to bring an end to controversy." There are two requirements for application of the doctrine of collateral estoppel: issues of fact must be the same, although the causes of actions need not be identical; and the party against whom the collateral estoppel is asserted must be identical or in privity with the party in the first action.

In asbestos cases, the requirements for collateral estoppel have been met. In those cases which have been tried a central issue was knowledge of medical hazards by the asbestos industry. In both Borel v. Fibreboard Paper Products Corp. and Karjala v. Johns-Manville Products Corp. a decision for the plaintiffs necessitated a finding that the asbestos industry knew or should have known of the dangers of asbestos inhalation by insulation workers. Borel was employed in the industry between 1936 and 1969; Karjala was employed between 1948 and 1966. Both juries returned verdicts in favor of the injured plaintiffs.

The rule of mutuality of estoppel, requiring the party asserting the doctrine of collateral estoppel to himself have been subject to preclusion if the first action had gone against him, is no longer a requirement for the application of collateral estoppel in many jurisdictions. Therefore the doctrine can be used to preclude the defen-
dants from relitigating the issue of medical knowledge, because the defendants in the majority of asbestos cases have litigated their knowledge and lost. For example, Johns-Manville litigated its knowledge in both *Borel* and *Karjala*. It had an opportunity to defend and lost. Consequently, a plaintiff should be able to prevent Johns-Manville from relitigating its notice of the dangers of asbestos inhalation by insulation workers.

However, the party against whom the plea is asserted must have been a party in the prior litigation or in privity with the party in the prior action. Each plaintiff in the asbestos cases has to be provided an opportunity to litigate the issue of knowledge and notice. Sustaining preclusion against plaintiffs would be a denial of due process.

This presents an equitable problem because the defendants may be precluded and the plaintiffs may not. Hypothetically, a defendant could win the first twenty asbestos cases and still be forced to relitigate his knowledge in each successive case. Should the defendant lose a case, future plaintiffs could preclude him from relitigating the issue of medical knowledge.

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L. Rev. 217, 222-24 (1954); Currie, *Mutuality of Collateral Estoppel: Limits of the Bernhard Doctrine*, 9 Stan. L. Rev. 281, 283 (1957); James, supra note 181, §11.16, at 563-64. With respect to nonparties as well as parties to the original litigation, an issue resolved in the first case cannot be relitigated unless there is a good reason shown for doing so. Reasons that may justify relitigation as catalogued by the Restatement (Second) of Judgments include:

- the law governing the administration of the claims involved in the two actions indicates that the rule of preclusion should not be applied;
- the party invoking the benefit of the rule could have joined in the prior action but refrained from doing so;
- the prior determination is of dubious reliability; in that it was inconsistent with another determination of the same issue, was affected by the peculiar relationship between the parties to the first action, was based on a compromise verdict, or is indicated by incontestable evidence to have been plainly wrong;
- treating the issue as conclusive would prejudice another party involved in the second action;
- the issue is one of law rather than fact and the party should have an opportunity to obtain a reconsideration of the issue.

James, supra note 181, § 11.25, at 583 (citing Restatement (Second) of Judgments § 88(1)-(7) (App., Tent. Draft No. 3, 1976)).

191. James, supra note 181, §§ 11.16, 11.22, at 563-64, 575-76.


193. See generally James, supra note 181, §§ 11.18, 11.19, at 567-71. A general jury verdict may be "cryptic and ambiguous." For example, a verdict for the defendant may have been based on plaintiff's contributory negligence, in the absence of defendant's negligence,
Currently, there are decisions which indicate that the industry knew or should have known of the dangers, as well as a few unreported decisions which imply that the defendants did not know and could not know of the medical risks. In *Bumgardner v. Johns-Manville Corp.*, the trial judge instructed the jury that their first vote should be on the medical knowledge which the defendants could have possessed between 1946 and 1973. The jury returned a verdict in favor of the defendants within forty-five minutes, implying that the first vote may have been the one adverse to the plaintiff.

or on the lack of a causal connection between the negligence and the injury. “Unless such an ambiguity is resolved by admissible evidence, the party who seeks the benefit of issue preclusion will fail to get it...” *Id.* § 11.18, at 568.


195. The plaintiff in *Bumgardner*, like the plaintiffs in *Borel* and *Karjala*, was employed as an insulation worker between 1946 and 1973. *Id.*

196. Judge Chapman’s initial charge to the jury in the *Bumgardner* case stated:

In determining whether there was a defect due to a failure to warn or inadequate warning, you must consider two elements, first, whether the Defendant knew or should have known about the danger of asbestos at the time it sold the insulation material; and second, whether it failed to adequately warn the users of its product about this danger. The question of whether the Defendants knew or should have known about the danger of asbestos in insulation materials when they were sold and used by the Defendant is a most important issue in the case.

If you find that the Defendants did not know and had no way of knowing, when they sold their asbestos products that were used by the Plaintiff, that they were dangerous to his health then you should go no further, because if they did not know it they could not be responsible. You should end your deliberations at that point and write a verdict for the Defendants. If, on the other hand, you find that some of the Defendants did know, or by applying developed human skill and foresight, they should have known of the danger, then you should next consider whether or not the Defendants adequately warned of the dangers associated with their asbestos products.

The question of whether defendant knew or should have known the dangers of asbestos to persons using it in the insulation business is the most important issue in the case. You have heard a great deal about the state of the art at various times and dates.

When we speak of the state of the art we are referring to what doctors, scientists and others in this area of knowledge knew about the dangers of asbestos at the time the plaintiff was being exposed to the product.

The state of the art does not mean what one doctor or one scientist dealing in a limited field with limited facts has concluded; but always remember that a manufacturer of a product is chargeable as an expert in that field of his product and the duty is upon the manufacturer to keep up with the available medical and scientific reports and materials concerned with the use of its products.
In determining the applicability of the doctrine of collateral estoppel to asbestos litigation, the courts will have to determine whether the conditions for its application have been met, and whether the saving in judicial time outweighs the possible inequity to the defendants. The doctrine has been applied in mass disaster situations, especially where the length of the first trial and the completeness of the discovery and pre-trial conference proceedings seemed to indicate that the issue was fully litigated and the defendant was unable to produce any evidence which might change the result. The potential number of plaintiffs, coupled with the extensive litigation on the issue of medical knowledge which has occurred and the length of time required to prove knowledge should the doctrine of collateral estoppel not be applied, are factors which indicate not only the viability but also the appropriateness of the doctrine to asbestos litigation.

IV. Conclusion

For the next thirty years individuals previously exposed to asbestos...
tos will continue to manifest injury. Some of those individuals, when they seek compensation through the court system will be barred from recovery as a result of statutes of limitations and multiple defendants problems. An asbestos victim under the current tort system may be precluded from recovery if he sues in one state but not in another.

Adoption of a discovery statute of limitations rule complies with the policy reasons underlying the traditional exposure rule. It is more equitable because a plaintiff is not precluded from suit prior to the date when he knows of an injury. A discovery statute of limitations rule has already been adopted in some jurisdictions and should be adopted in every state to promote justice and equity in asbestos litigation.

Similarly, the recommendations concerning multiple defendants and collateral estoppel will also promote justice. Permitting a plaintiff to name as defendants those manufacturers which placed asbestos containing products on the market and shifting the burden of proof to them is a rational and equitable solution to the problem of multiple defendants in asbestos litigation. In some instances, application of the doctrine of collateral estoppel will also be justified. Once a defendant has had an opportunity to litigate fully his knowledge of the medical hazards as it relates to a class of plaintiffs, preventing relitigation of the issue will save judicial time without denying the defendant his due process rights.

The solutions applied in asbestos litigation may be applicable in other contexts. When an injury manifests itself many years after contact with the hazardous product there will be statutes of limitations problems similar to that encountered in asbestos litigation.199 The multiple defendant problem has been encountered where an industry manufactures a product later shown to cause injury, and the plaintiff is unable to show that his injury is caused by only one of the possible defendants.200 Application of the doctrine of collateral estoppel seems appropriate not only in asbestos litigation but also in mass disaster situations where there is potential relitigation of an issue by defendants who have previously been given the opportunity to defend.201

199. See notes 146, 150, 157-58 supra and accompanying text.
200. See notes 44 & 178 supra and accompanying text.
201. See note 197 supra.
Carcinogenic substances in the workplace and in the environment are numerous. Litigation in these areas will probably parallel asbestos litigation because there is a similarity in the issues. Proof of causation is difficult in cancer cases as a result of the long latent period between exposure and manifestation of symptoms. Also, more than one exposure may be the cause of the injury, and therefore there the multiple defendant problem again presents itself. Comprehensive solutions must be found to adequately compensate asbestos victims. The suggestions enumerated would resolve the major difficulties encountered by plaintiffs.

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202. See notes 2, 5, 51 supra and accompanying text.

203. See note 169 supra.

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