Mesothelioma: Has Patient Had Contact With Even Small Amount of Asbestos?

MESOTHELIOMA, primarily an asbestos-related cancer, has traditionally been tracked through the incidence rate in workers handling asbestos directly. Now, epidemiologists are recording cases of the tumor in persons who have worked with materials containing even small quantities of asbestos.

"It is a very important new phenomenon," says Irving J. Selikoff, MD, professor emeritus, Mount Sinai School of Medicine, City University of New York. "Physicians must now begin taking histories with questions directed to [learning if patients ever have been] construction workers."

Electricians, plumbers, steamfitters, laborers, carpenters, boilermakers, and their supervisors all have worked around asbestos. Brake-lining repairpersons, workers in chemical plants, refineries, powerhouses, and factories, and building maintenance personnel all are at risk, just as were the much-studied shipbuilders of the 1940s.

Until recently, the basic implements used in these trades contained the friable fibers. Some still do. Asbestos has been used in pipes, concrete, plastics, paints, asphalt, and shingles. The list goes on.

Robert Spirtas, MD, biostatistician, National Cancer Institute, Bethesda, Md, points to two trends that arose during the 1950s as asbestos use was introduced in the construction industry: more material was being used, and more people were being exposed with less intensity.

The lower concentrations of asbestos were thought by many to have minimized the susceptibility of workers to mesothelioma. But as cases of the malignant tumor appeared in tradesmen, epidemiologists began to suspect that the concentration level of the fibers was not the prime concern.

Further studies showed that one fiber of a certain length can lodge in the pleura of the lung, and 40 years later, the patient will exhibit signs of dyspnea, chest pain, or both (*Clin Chest Med* 1985;6[1]:127-140). To date, there has been no threshold level defined for asbestos-induced mesothelioma (*Mt Sinai J Med (NY)* 1986;53[6]:409-415).

Risk assessment tables have been attempted by Hans Weill, MD, professor of pulmonary medicine, Tulane University School of Medicine, New Orleans (*Am Rev Respir Dis* 1986;133: 5-13); the Health and Safety Commission, London (Doll R and Peto J: *Effects on health of exposure to asbestos*, London, HM Stationery Office, 1985); and the Royal Commission on Matters of Health and Safety, Canada (*Report on matters of health and safety arising from the use of asbestos in Ontario*, Toronto: Ontario Ministry of Government Services, 1984). Much of the evidence for these assessments relies on the studies of heavily exposed workers.

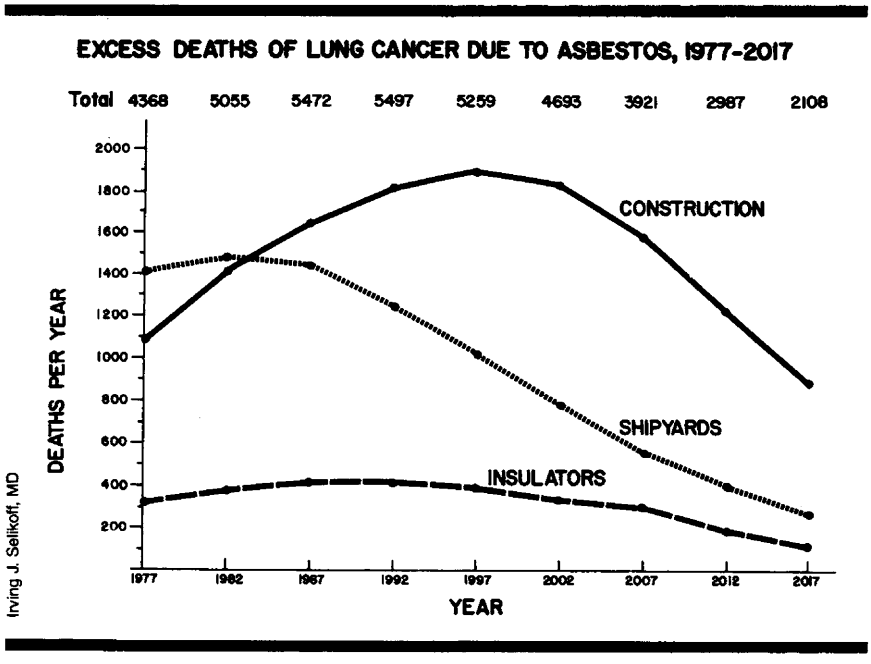
The construction industry poses problems for epidemiologists. The transient nature of the work force, the constantly changing locales of the workplace, and the very large number of firms involved (many with just a few employees) hamper research (*Am J Pub Health* 1986;176[12]:1392-1395).

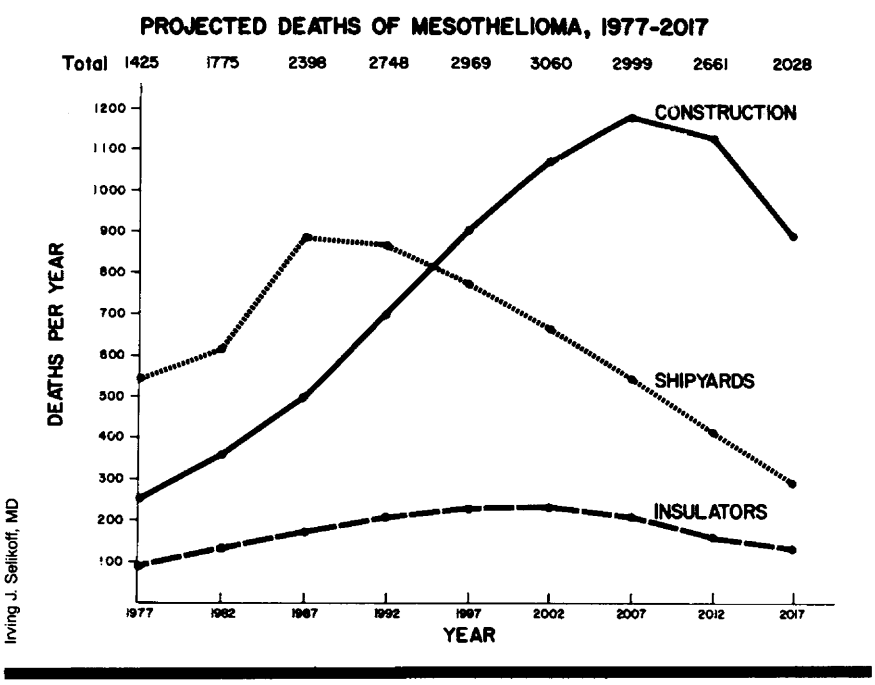
Selikoff's studies in the 1960s of shipbuilders and asbestos workers alerted the medical community to the hazards of the asbestos fibers (*JAMA* 1964;188: 22-26). Later studies suggested that the number of deaths from mesothelioma would continue to rise throughout the 1980s. This expectation was based on two factors: that the highest exposure rates occurred around 1943 as ships were built for the war effort, and that the 30- to 40-year latency period would end by the early 1980s (*Yale J Bio & Med* 1986;59[4]:435-451).

Further studies have led Selikoff to suggest that the incidence of mesothelioma will reach its peak around 1990 and then gradually decline. This estimate is based on the idea that exposure to asbestos would stop by 1980.

Since asbestos still is being used today, the number of deaths occurring from mesothelioma may be underestimated. The Bureau of Mines cites the 1985 US consumption of asbestos at 162 000 metric tons, down from the 1973 high of 800 000 metric tons. Consumption has not stopped, but it has diminished.

In June, the Occupational Safety and Health Administration lowered the allowable rate of exposure in the workplace from <2 fibers per cc of air to <.01 fibers per cc of air. The Environmental Protection Agency is holding hearings now to determine if a total ban on the use of asbestos is warranted. A decision is expected within the year.





Because the extent of asbestos exposure is wide and the risk levels are still undetermined, emphasis must be placed on the screening, testing, and education of workers.

According to Selikoff, the construction unions are becoming very sophisticated about asbestos problems. They are beginning screening processes for workers associated with the material.

The American Federation of Labor-Congress of Industrial Organizations (AFL-CIO) has lawyers working on the legal problems, but the unions see education as the key. Selikoff has recently compiled a booklet for the AFL-CIO aimed at workers who have been exposed to asbestos. The nine-page manual provides facts for "at risk" persons, describing the types of diseases that can occur, the symptoms, the tests that can be expected, and the type (specialty) of physician who should be seen.

Mesothelioma is still a relatively young disease. The first incidence of the asbestos-related tumors was recorded only 40 years ago. Knowledge is increasing, but inadequate record keeping, lax reporting of case histories (many times, due to the long time lapse between exposure and symptoms, patients cannot remember working around asbestos), and poor health education among workers have hindered epidemiologists (*Am J Pub Health* 1986;176[12]: 1392-1395).

According to Weill, the rates of mesothelioma in men are still going up and are expected to continue to do so. Because information in the tumor registries cannot be retrieved by job classification, he says, it is difficult to tell if the construction industry and other trades are accountable for the increase.

Spirtas says: "It is difficult to predict future trends in mesothelioma. However, the current levels of incidence are clearly of substantial enough magnitude to justify greater scientific as well as public health and economic concerns" (*Am J Ind Med* 1986;9:397-407).—by Katherine Garrahan, winter graduate journalism fellow (Medill School of Journalism, Northwestern University, Evanston, Ill)

Friable Asbestos in Schools Must Be Found by May 1988, Removal Plan Must Start by 1989

FOR 20 YEARS, from the 1950s to the 1970s, asbestos was used as a fireproofing agent in America's school systems. Today, the presence of the potentially cancer-causing material is igniting fires of concern across the country.

Parental anxiety, boycotting of classes, and the closing of school buildings in many communities forced the Environmental Protection Agency to mandate the inspection of all elementary and secondary public and private institutions for asbestos-containing materials. By federal law, the inspections must be carried out by May 9, 1988, and the implementation of management plans for the removal of any friable asbestos must begin by July 9, 1989.

Children's exposure to asbestos in the schools naturally is of special concern to pediatricians. Higher activity and breathing rates, more time spent close to the floor where fibers accumulate, and natural curiosity or mischievousness may lead children to seek contact with deteriorating surfaces in school buildings. The American Academy of Pediatrics (AAP) has issued a statement urging physicians to work with school boards to promote the cleanup of such potentially hazardous situations.

Philip Landrigan, MD, Mount Sinai School of Medicine, City University of New York, chair of the AAP's committee on environmental hazards, says: "The most important factor is that each situation must be judged on its own merits." Landrigan points to two crucial elements that physicians should emphasize when dealing with the presence of asbestos in schools: individual inspections must be made at each site, and if friable asbestos is found, contractors experienced in asbestos removal must be hired to rid the site of the fibers.

"It is certainly possible to remove the material with proper work and proper protection," says William Nicholson, PhD, professor of community medicine, Mount Sinai School of Medicine, City University of New York. He advocates removal to prevent any asbestos exposure, but admits sealing the material is sufficient in many cases.

Presently, 15 states require asbestos abatement contractors to be licensed. Ten other states have legislation pending, and the EPA is developing a model accreditation plan for persons who inspect, develop management plans, and remove the asbestos from buildings.

Opinions vary as to the exposure risk children encounter in the school envi-

acquired during their time as prisoners working on the Burma-Thai railway, 40 years previously.

Of the 150 veterans so far investigated, 29 have had the typical clinical manifestations of episodic diarrhea, vague abdominal discomfort, eosinophilia, and rapidly advancing linear skin eruptions (larva currens).[2] The remaining 121 patients were not considered to have strongyloidiasis and, indeed, this was supported by lack of eosinophilia and at least three negative stool examinations and cultures. In the group of 29 suspicious cases, however, *S stercoralis* was found in 25 (86%) on stool examination.

Comment.—Thus, the typical clinical findings in this group of patients exposed to infestation decades before seem quite reliable in predicting parasite carriage. Examination of their past medical records also indicated that these features had been quite consistent over the years, with diagnoses of postdysenteric scarring and psychoneurosis being applied to explain the symptomatology. Several of the patients even had episodic larva currens rash while undergoing investigation.

We still consider the clinical manifestations of disseminated strongyloidiasis—although sometimes ill-defined—to be helpful in suggesting the diagnosis and discriminating carriers from noncarriers, particularly in high-risk groups. A high index of suspicion must be maintained when dealing with veterans of foreign wars, particularly if they have been prisoners of war, and also with immigrants from endemic areas.

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1. Genta RM, Weesner R, Douce RW, et al: Strongyloidiasis in US veterans of the Vietnam and other wars. *JAMA* 1987;258:49-52.
2. Grove DI: Strongyloidiasis in Allied ex-prisoners of war in Southeast Asia. *Br Med J* 1980;1:598-601.

In Reply.—We agree with Byard and colleagues that the clinical manifestations of disseminated strongyloidiasis are helpful in suggesting the diagnosis. However, our study was designed to evaluate the usefulness of serology for the detection of chronic, nondisseminated infections, which often remain undiagnosed for a long time precisely because of their few and nonspecific manifestations.

The high prevalence of larva currens found in British,[1] Australian,[2] and American[3] former prisoners of war who worked on the Burma-Thai railroad contrasts with the virtual absence of this dermatitis in patients with documented *S stercoralis* infections presumably acquired on the American continent.[4] We have suggested that the existence of separate geographic strains of the parasite may account for this difference,[5] but further studies are needed to test this hypothesis.

Based on their Tasmanian experience, Byard and colleagues correctly stress the importance of maintaining a high index of suspicion when dealing with veterans of foreign wars and immigrants from endemic areas. It should be emphasized, however, that *S stercoralis* is also present in the southeastern United States. Since the publication of our article, three new cases of disseminated strongyloidiasis have occurred in immunosuppressed patients in the Cincinnati area: all patients were natives of eastern Kentucky and had no history of overseas travel. In each case the serology was highly positive, but no attempt to rule out strongyloidiasis had been made prior to the initiation of steroid therapy. Such occurrences further stress the importance of screening (by serology or repeated stool examinations) all candidates for immunosuppression who have a significant geographic history.

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1. Gill GV, Bell DR: *Strongyloides stercoralis* infection in former Far East prisoners of war. *Br Med J* 1979;2:572-574.
2. Grove DI: Strongyloidiasis in Allied ex-prisoners of war in Southeast Asia. *Br Med J* 1980;1:598-601.
3. Pellettier LL: Chronic strongyloidiasis in World War II Far East ex-prisoners of war. *Am J Trop Med Hyg* 1984;33:55-61.
4. Milder JE, Walzer PD, Kilgore G, et al: Clinical features of *Strongyloides stercoralis* infection in an endemic area of the United States. *Gastroenterology* 1981;80:1481-1488.
5. Genta RM: *Strongyloides stercoralis*: Immunobiological considerations on an unusual worm. *Parasitology Today* 1986;2:241-246.

CORRECTIONS

Incorrect Dosage.—An error occurred in the COUNCIL REPORT entitled "In Vivo Diagnostic Testing and Immunotherapy for Allergy: Report I, Part II, of the Allergy Panel," published in the Sept 18 issue of THE JOURNAL (1987;258:1505-1508). On page 1507, the second sentence in the first paragraph of the "*Hymenoptera* Venom Immunotherapy" section should have read as follows: "Patients should have clinical evidence of anaphylaxis from specific *Hymenoptera* sting, a positive skin test reaction with specific *Hymenoptera* venom and/or specific serum IgE antibody, and should receive injections according to the recommended schedule to attain an effective dose of approximately 100 μg [not '100 mg'] of specific venom every month."

Incorrect Wording.—An error occurred in the Letter to the Editor entitled "Anabolic Steroids and Sports," published in the Sept 25 issue of THE JOURNAL (1987;258:1608). On page 1608, the last complete sentence in column 1 should have read as follows: "The 70th session of the Texas legislature recently passed a bill (Senate bill 1035) amending *Vernon's Texas Civil Statutes* article 4476-14 and classifying [not 'making'] 16 anabolic steroids and human growth hormone as dangerous drugs [not 'controlled substances for which triplicate forms will have to be used to prescribe them']."

Incorrect Values.—Several errors occurred in the Letter to the Editor entitled "Naproxen and Agranulocytosis," published in the April 3 issue of THE JOURNAL (1987;257:1732). In the "Report of a Case" section, the third sentence should have read as follows: "On admission he was noted to have a white blood cell count of 2300/mm^3 (2.3×10^9/L) [not '0.0023×10^3/mm^3 (0.0023×10^9/L)'], with 16% (0.16) polymorphonuclear leukocytes (368/mm^3 [0.368×10^9/L]) [not '0.000368×10^3/mm^3 (0.000368×10^9/L)'] and 0% (0.00) band forms." In that same paragraph, the eighth sentence should have read as follows: "His absolute granulocyte count dropped to 52/mm^3 (0.052×10^9/L) [not '0.00052×10^3/mm^3 (0.00052×10^9/L)'] while his white blood cell count remained stable at 2600/mm^3 (2.6×10^9/L) [not '0.0026×10^3/mm^3 (0.0026×10^9/L)']." In the next paragraph, the third sentence should have read as follows: "His fever completely resolved within 72 hours of discontinuing the naproxen therapy, and over the next week his white blood cell count stabilized at 7600/mm^3 (7.6×10^9/L) [not '0.0076×10^3/mm^3 (0.0076×10^9/L)'] with 45% (0.45) polymorphonuclear leukocytes (3420/mm^3 [3.42×10^9/L]) [not '0.00342×10^3/mm^3 (0.00342×10^9/L)'] and 10% (0.10) band forms."

Incorrect Wording.—An error occurred in the SPECIAL COMMUNICATION entitled "Patient Dumping: Status, Implications, and Policy Recommendations," published in the March 20 issue of THE JOURNAL (1987;257:1500-1502). On page 1501, the second sentence in the second full paragraph of column 1 should have read as follows: "The Hill-Burton legislation's inadequacies include lack of a definition of a medical emergency [not 'Hill-Burton legislation includes community service of a medical emergency'] and no effective means for enforcement.'"

Incorrect Value.—An error occurred in the MEDICAL NEWS & PERSPECTIVES article entitled "Mesothelioma: Has Patient Had Contact With Even Small Amount of Asbestos?" published in the March 27 issue of THE JOURNAL (1987;257:1569-1570). On page 1569, the first sentence of the third full paragraph in column 3 should have read as follows: "In June, the Occupational Safety and Health Administration lowered the allowable rate of exposure in the workplace from <2 fibers per cc of air to <0.2 [not '<.01'] fibers per cc of air."