

730.053



August 29, 1979

MR. R. L. BRUNNER

Ron:

Attached is the NCI comment regarding fibrous glass press reports. This is the major issue and I will discuss it with you when I get back on Friday.

Attachment

RLS	CTG	MM	DPA	KCC
NCI SAFETY OPERATIONS				
WMC	PJW	BJD		FILE

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R. E. JOYNER, M. D.

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National Cancer Program special communication

July 9, 1979

Reports have appeared in the public press suggesting that dust from fibrous glass may be responsible for causing a form of lung disease in workers similar to that produced by asbestos.

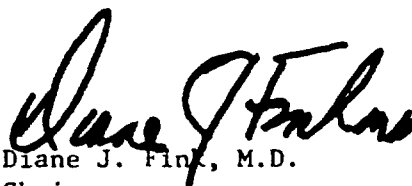
These reports are attributed to information about a case of pneumoconiosis presented at a meeting held under the auspices of the National Cancer Institute on November 15, 1978. They have occasioned widespread concern among those who make and use fibrous glass.

The purpose of this communication is to provide additional information which now shows that the case in question was almost certainly due to asbestos and not to exposure to fibrous glass.

Sincerely,



Arthur C. Upton, M.D., Director
National Cancer Institute
National Cancer Program



Diane J. Fink, M.D.
Chairman
Asbestos Education Task Force

LAM 002165

DPMC-17854

PNEUMOCONIOSIS AND FIBROUS GLASS

Introduction

A paper entitled "A Case Study on Fiberglass Pneumoconiosis and Some Comments on the Principle of Pneumoconiosis Prevention" by Tatsuo Sano, Keizo Chiyotnni and Hisao Shida, was presented by Dr. Sano (Vice Director, Institute for Science of Labour, Environmental and Occupational Disease, Kawasaki, Japan) at a meeting of the Asbestos Education Task Force of the National Cancer Institute on November 15, 1978 in Bethesda, Maryland.

This report included preliminary findings in a case of pneumoconiosis that appeared to be associated with occupational exposure to fibrous glass dust. Although the authors noted that the results were not conclusive, news of the report published in the lay press occasioned widespread interest and concern because of the implication that exposure to fibrous glass was capable of producing lung disease similar to that resulting from exposure to asbestos.

Since that time Japanese investigators have completed previously planned studies on the case in question and have also examined other workers in the same factory. The findings and conclusions of these investigations are summarized below; they leave little doubt that prior exposure to asbestos dust was responsible for the effects observed.

Initial Findings

As reported by Dr. Sano on November 15, 1978, a woman, aged 54, who had worked from 1970 to 1973 in a factory making prefabricated houses, where she was cutting glass wool insulation, was found in 1975 to be suffering from irritation of the larynx and a dry cough, and to have developed calcified plaques on the diaphragm and parietal pleura.

Examination of the lungs by selective alveolobronchography showed changes in the small airways to those produced by inhalation of long-fibered asbestos dust. Ferruginous bodies were found in tissue obtained by transbronchial biopsy.

Tentative Conclusions

Discussing these results, Dr. Sano considered it possible that the type of pneumoconiosis seen in this case could have been caused by fibrous glass, but observed that such a conclusion could not be reached without additional evidence from electron microscopy. In particular, it was important to determine whether the ferruginous bodies were caused by fiberglass or asbestos. He did not believe that asbestos was involved because it was understood that the patient had neither lived nor worked where there was the likelihood of inhaling asbestos dust. Dr. Sano also noted that the lack of a thorough epidemiological study was an important deficiency.

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Analysis of Biopsy Specimen

The planned examination by electron microscopy of the tissue obtained by transbronchial biopsy has now been completed.

The results show that many small chrysotile asbestos fibers were present, but no glass fibers, nor any fibers of other materials. The chrysotile fibers were found in higher concentration than is normal for such tissue; they were between 0.05 and 0.07 μ m diameter, and 0.3-0.5 μ m long, some 1-2 μ m long. The fine structure of some of the chrysotile fibers was seen, by selected area electron diffraction, to be amorphous, which implies that some magnesium or silicon ions had been leached out of the fibers as a result of long residence in the tissue. Some non-fibrous mineral dust particles were identified as well as some particles of glass dust.

Chemical composition of the various particles detected was determined from x-ray energy spectra taken in the microscope.

Occupational History

At the time of the initial report, it was believed that the patient in this case had neither worked nor lived where exposure to asbestos dust was likely. A more thorough occupational history obtained subsequently indicates that she had held many different jobs, several of them in dusty conditions, and that there had been at least one opportunity for occupational exposure to asbestos as early as 35 years before symptoms of pneumoconiosis developed.

Other Workers

During discussion of the original report to the Asbestos Education Task Force, it was understood that six other cases of pulmonary disease had been found among workers at the same factory. The existence of these cases cannot be confirmed and is attributed to a linguistic error.

It is reported that all 20 workers in the factory have recently been examined at the Rosai Hospital for Silicosis. Only three of them had been exposed to fibrous glass. No disease was found that could be attributed to this exposure.

Comments

The information summarized above leads to the conclusion that the case of pneumoconiosis reported by Dr. Sano on November 15, 1978, was a result of exposure to asbestos dust, probably many years previously. This conclusion is entirely consistent with the large body of accumulated information on the natural history of asbestosis.

A Note on Sources and Acknowledgements

The report given by Dr. Sano to the Asbestos Education Task Force on November 15, 1978, had previously been presented at the 5th Conference on Pneumoconiosis,

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October 29 - November 3, 1978, Caracas, Venezuela.

After hearing the report in November 1978, the Division of Cancer Control and Rehabilitation of the National Cancer Institute wrote to Dr. Sano requesting information on any new findings in connection with the workers who had been exposed to a fibrous glass.

At the end of February 1979, a personal communication from Dr. I.J. Solikoff, Mt. Sinai School of Medicine, indicated that electron microscopical analysis of the biopsy material by N. Kohyama, H. Kyono, and K. Kawai, National Institute of Industrial Health, Kawasaki, Japan, showed the presence of chrysotile fibers but no glass fibers. Confirmation, and a copy of Dr. Kohyama's report were received in March with a report by Dr. Jon L. Konzen, Owens Corning Fiberglas, who, with Dr. Paul Kotin, Johns Manville Corporation, met with Japanese occupational health authorities in February 1979. Further details of the occupational history and the health of other workers were included in the latter report. So far as is now known, none of the reports mentioned above have been published in the scientific literature.

THE NATIONAL CANCER PROGRAM is a joint effort by the Federal Government, nonprofit organizations, private and public institutions to coordinate the discovery and implementation of knowledge that will advance the attack on cancer. The commitment of the National Cancer Program to the American people is that the most promising research leads will be pursued with diligence and that every research advance that can benefit patients will be applied without delay.

Arthur C. Upton, M.D.
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DFMC-17857



"Occupational Health and Stress," "Quantitation and Statistics in Occupational Health," and "Occupational Health and Safety Education."

In addition to the general scientific sessions, five postgraduate seminars open to physicians and industrial hygienists will be held Tuesday, September 25.

The conference is open to nonmembers as well as members of the two organizations. For further information, contact American Academy of Occupational Medicine, 150 North Wacker Dr., Chicago, Ill. 60606; telephone (312) 782-2166.

PLAINTIFF'S EXHIBIT

Variances

SH-2618

AGENCY REPORTS 14 VARIANCE REQUESTS IN PROCESS, 83 GRANTED AS OF JUNE 30

The Occupational Safety and Health Administration had 14 applications for variances from its standards in process on June 30, 1979, according to a report on the status of variance applications for the third quarter of fiscal 1979.

By June 30, 1979, 1,261 variance requests had been received by OSHA, and 83 variances were granted.

Of the 14 applications being processed as of June 30, five were undergoing technical review, five had been published in the *Federal Register* and were awaiting further administrative action, and four were returned to the applicants for further information.

No variances were granted during the third quarter.

Laclede Steel Company, Alton, Ill., was issued an interim order on its application for variance from 1910.1025 (lead) (Current Report, July 19, p. 169).

Three applications received during the quarter are undergoing technical review. In addition to the application of Laclede Steel, the applications of the following two firms are being reviewed:

► General Electric Company, St. Louis, Mo., for variance from 1910.108 (c) (2) (1) (dip tanks containing flammable and combustible liquids — overflow pipes).

► Clark Equipment Company, Buchanan, Mich., for variance from 1910.107 (e) (2) (flammable and combustible liquids — storage quantity).

Two firms were denied variances from OSHA standards. Patterson Construction Company, Monongahela, Pa., was denied a variance from 1926.500 (d) (1) (guarding of open-sided floors), and Bunker Hill Company, Washington, D.C., was denied a variance from 1910.1018(m) (inorganic arsenic — hygiene facilities and practices).

No applications were withdrawn during the third quarter.

General Policy

SBA APPROVES OVER \$750,000 IN LOANS DURING THIRD QUARTER OF FY 1979

The Small Business Administration approved \$764,000 during the third quarter of fiscal 1979 in loans to small businesses seeking to comply with provisions of the Occupational Safety and Health Act.

Under Section 28 of the Act, SBA is granted authority to make loans to small businesses that otherwise would suffer substantial economic injury without assistance in paying the cost of compliance with OSHA standards.

Loans approved for the third quarter, April through June, 1979, were as follows:

Acme Feed Mills, Burlington, N.C.	\$500,000
Davis Cabinet Shop, Inc., Matoaca, Va.	\$222,000
Fish Lake Resort, Medford, Ore.	\$42,000

Discrimination

WORKERS FIRED FOR SAFETY COMPLAINTS WIN NEARLY \$35,000 IN BACK-PAY AWARDS

Two construction workers who were fired in 1975 after they complained about safety on the job site were awarded back pay totaling nearly \$35,000, the Occupational Safety and Health Administration announced August 2.

Robert Elliot of Herndon, Va., and Patrick Coady of Brandywine, Md., were fired by P & Z, a construction company working on the Washington, D.C., Metro subway system. The company claimed the men were fired as the result of their involvement in an accident.

The court, however, found in favor of the workers, who contended the real reason for their dismissal was their frequent complaints about safety hazards. U.S. Magistrate Henry H. Kennedy, Jr., ruled for Elliot and Coady in March 1978, but appeals by the construction company delayed the awarding of the back-pay checks until last month.

Basil Whiting, deputy assistant labor secretary for occupational safety and health, awarded Coady his back-pay check in a brief ceremony July 27. Elliot received his back-pay award July 24.

"We're pleased with the decision — not only with the size of the award — but that the court has recognized that when workers file safety complaints and are fired as a result, their rights are being trampled upon," Whiting stated.

United Kingdom

NEW CONTROLS ON MAN-MADE FIBERS RECOMMENDED BY HEALTH COMMISSION

LONDON — (By a BNA special correspondent) — New control limits on airborne concentrations of man-made mineral fibers were recommended July 11 by the United Kingdom's Health and Safety Commission in an effort to reduce the health threat posed by these substances.

However, the commission maintained that because research so far has failed to demonstrate a cancer risk to man from such fibers, it cannot suggest a threshold limit value based on the risks associated with using these materials.

Man-made mineral fibers, such as glass fiber, and rock and slag wool, are used as substitutes for natural fibers such as asbestos, which is a known carcinogen.

The commission nonetheless warned that "the implications of animal studies should not be ignored and it would be prudent to regard very fine fibers with suspicion." The central problem is that, although there is no evidence of carcinogenic effect in workers, animal experiments have shown that fibers of a certain shape and size may induce tumors, the report indicated.

The proposed new limits, along with many recommendations, are contained in a report made to the commission's advisory committee on toxic substances by a working party set up to review present policy on the health risks of man-made mineral fibers.

The report recommended introduction of a fiber-count control limit of five fibers per milliliter of air, to minimize inhalation of respirable fibers less than three micrometers in diameter. However, labor union members of the working party disagreed with this recommendation, explaining they want the limit reduced to three fibers per milliliter.

The report also proposed that the mass concentration of fibers should not exceed five milligrams per cubic meter of air. The threshold limit value for "nuisance dusts," which currently applies to man-made fibers, is 10 milligrams of total dust per cubic meter.

In most manufacturing situations where engineering control is possible, the new control limits already are being achieved, according to the report. Where they are not, the new standards "should be achieved with the minimum of delay." However, in some situations, such as construction sites, "special difficulties arise and the time needed may be longer, but should not exceed three years," the report stated.

Report Findings

Other conclusions of the report included findings that:

- ▶ No evidence has been produced to indicate that man-made mineral fibers cause fibrosis of the lung.
- ▶ Skin and eye irritation are unpleasant but do not appear to cause long-term disease.
- ▶ Irritation of the upper respiratory tract may be caused by nonrespirable fibers, but does not appear to be irreversible and constitutes no long-term risk to health.
- ▶ Most studies suggest that bronchitis is not an occupational hazard of exposure to man-made mineral fibers but if any cases of bronchitis are attributable to it they are few in number.

The working party emphasized that while current medical and scientific information has been taken into account, "at this stage it is not possible to set standards which are determined on this basis. The recommendations therefore are based on the application of normal occupational hygiene principles, which are to prevent exposure where it is reasonably practicable to do so and to keep as low as is reasonably practicable any unavoidable exposure." The recommendations are "interim", and should be reviewed "as soon as significant new information becomes available."

The discussion document, "Man-made Mineral Fibers," is available from Her Majesty's Stationery Office. Comments on the report should be sent no later than October 19, 1979, to R.G.H. Eltze, Health and Safety Executive, Hazardous Substances Branch D2, 25 Chapel Street, London NW1 5DT.

California

APPEALS JUDGE EXCLUDES EVIDENCE OBTAINED BY DOSH THROUGH ILLEGAL MEANS

SAN FRANCISCO — (By an OSHR staff correspondent) — Evidence of an alleged violation may be excluded from an appeals hearing if it was obtained through means that violate the law, according to a ruling by an administrative law judge of the California Occupational Safety and Health Appeals Board.

In vacating a citation against *Don Dittmore Company, Inc.*, Buena Park (Docket Nos. 836-78-839-78), Judge Ronald F. Peters found that a Division of Occupational Safety and Health (DOSH) inspector acted improperly in conducting an inspection for alleged scaffold violations.

The DOSH inspector testified that while driving past a construction site he noticed what appeared to him to be violations of scaffold safety standards. To observe the situation more closely he went on the site but did not contact an employer representative and afford him an opportunity to accompany the inspection. Only after observing the alleged violations did the inspector request permission from the job superintendent to inspect the site.

The actions of this inspector violate not only the division's own policies and procedures but the provisions of Labor Code Section 6314(d) as well, Peters concluded. Both require that an opportunity be given to the top management official at the site to accompany the inspector.

"It was obvious from the testimony that the engineer chose to surreptitiously return to the site in order to establish the requisite employee exposure in order to write a

citation," he noted. The DOSH engineer's conduct also demonstrated bias against Dittmore, he added.

Although the procedures for appeals under the California Occupational Safety and Health Act are civil in nature, not criminal, it is appropriate to borrow from criminal procedure the exclusionary rule, Peters explained. Evidence gathered by the division in the course of this improper investigation should be excluded from a hearing, he said, citing the U.S. and California Constitutions. Thus, Peters vacated five citations and a total of \$1,750 in civil penalties proposed by DOSH.

Cordova Chemical

A citation is valid even if its description of the alleged violation omits a reference to the terms of the cited standard, unless the employer is prejudiced "by the manner in which the violation is pleaded," Administrative Law Judge Adolf Loeb said in the case of *Cordova Chemical Company*, Sacramento (Nos. 457-79 and 458-79). He upheld a serious violation of a standard requiring prompt cleanup of asbestos spills even though the asbestos exposure did not result in a spill in the normal sense of that term.

The case arose when a DOSH inspector touring Cordova's plant noticed that insulation containing asbestos had fallen off some pipes and was not cleaned up. He cited the firm for alleged serious violation of 8 CAC 5208(c) which requires asbestos spills to be cleaned up promptly and debris, waste, and scrap to be disposed of in sealed impermeable bags or containers. The written DOSH citation described the violation as a "spill," but Cordova contended the citation was invalid because the fallen insulation did not constitute a spill.

Loeb rejected Cordova's argument, saying that the standard should be construed liberally to protect workers so long as the employer's rights are not prejudiced in the process. "The terms of the safety order take precedence over the division's description of the alleged violation," he said.

"Any proof that would bring the violation within the ambit of the cited safety order is relevant, even though the subject matter of the proof is not referenced in the division's description of the alleged violation, excepting however, if the employer shows that it is prejudiced by the manner in which the violation is pleaded, such a showing not having been made here," Loeb concluded.

Loeb affirmed the designation of the violation as serious and upheld the division's proposed \$1,000 fine.

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Publications

BOOK EXAMINES U.S. SAFETY, HEALTH POLICY, PROPOSES IMPROVEMENTS

Regulating Safety: An Economic and Political Analysis of Occupational Safety and Health Policy examines the origins of U.S. occupational safety and health policy, assesses its effectiveness, and presents proposals for improvements.

Written by John Mendeloff of the University of California at Berkeley, the book examines the forces that influence legislators, lobbyists, and bureaucrats in making regulatory policy. The book also includes an evaluation of the Occupational Safety and Health Administration's impact on work injury rates.

Mendeloff concludes the book by presenting several new proposals for enforcement and cost/benefit analysis, including the proposal that programs for enforcing standards be designed to simulate the operations of a tax.

The book is available from MIT Press, Cambridge, Mass., for \$15.

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MANAGER, SAFETY AND INDUSTRIAL HYGIENE

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Evidence Grows on Fiberglass Link to Cancer

NEW YORK TIMES MARCH 15, 1987

By PHILIP SHABECOFF

Special to The New York Times

WASHINGTON, March 14 — Emerging evidence that fiberglass and other manufactured mineral fibers may cause lung cancer and other diseases is creating a sensitive, potentially far-reaching public health issue.

The evidence, although far from conclusive, is sending tremors through the fiber industry and Federal regulatory agencies. Industry officials, however, insist the evidence to date shows no health problem.

These synthetic fibers, already in wide use as building materials and insulation, in cars, furniture and packaging and for many other applications in a \$3 billion-a-year industry, are increasingly being employed as substitutes for asbestos, a known cause of cancer and other serious illness.

Activity in Industry

Now, recent studies of the health histories of workers who make fiberglass, rock wool and ceramic fibers, as well as tests on laboratory animals, suggest that the substitutes themselves may pose a health threat, albeit one of still unknown and heavily debated dimensions.

The results of the studies, although inconclusive, have caused a flurry of

activity in the industry. Manufacturers of the synthetic fibers have undertaken costly new studies on the health effects of their products and are consulting with Federal regulators.

If the fibers prove to be a serious health threat, it could result in loss of sales, expensive damage claims and extensive measures to reduce exposure among workers, and possibly the general public.

The studies that are generating the most concern were based on an examination of mortality records of workers in North America and Europe who produced synthetic mineral fibers and were first exposed to relatively low levels of airborne fibers at least 30

years earlier. Scientists who have reviewed the studies agree that these workers show a higher rate of lung cancer than normal.

Industry officials insist that the evidence about fiberglass and other synthetic mineral fibers is inconclusive and that it is just as likely that the worker deaths found in the studies were caused by other factors, such as smoking, exposure to cancer-causing chemicals and family history. They also said that even if the synthetic fibers did cause cancer, the exposure levels were so low that there would be no serious public health threat.

But within the past few months, the

Continued on Page 18, Column 3

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Evidence Is Growing on Fiberglass Link to Cancer

Continued From Page 1

manufacturers of fiberglass and related products, including Owens/Corning Fiberglass, the Corning Fiberglass Corporation and the Manville Corporation, have revised technical data sheets required by the Occupational Safety and Health law to state that recent epidemiological studies have found that their products might cause lung cancer.

Protection From Lawsuits

Spokesmen for these companies said the changes were made because of their policy of keeping the public informed and because it was the law. But they also conceded that it was necessary to protect themselves against possible future lawsuits.

Most of the more than a dozen scientists, public health officials and Federal regulators interviewed said that even if the evidence about synthetic fibers causing cancer proved correct, the country probably would not be facing another health disaster of the dimensions of the asbestos epidemic. The number of premature cancer deaths caused by asbestos is now estimated at 1,000 a year and rising.

Raymond Morley, a lawyer representing the Sheetmetal Workers International and other construction unions in litigation over asbestos injury claims, said a number of studies have shown that fiberglass causes diseases such as bronchitis and emphysema in workers that produce it, and he raised the possibility that the unions might sue the fiberglass makers.

Evidence about the dangers of asbestos began emerging in the 1930's, but no action was taken to protect the public until the 1970's, after many workers had already developed lung cancer and other diseases. Now exposure to asbes-

tos is stringently regulated by the Federal Government, and the Environmental Protection Agency has proposed gradually eliminating virtually all uses of the mineral.

Cancer and Fiber's Shape

Research published in 1977 by Dr. Mearl Stanton of the National Cancer Institute indicated that it was the size and shape of the fiber, rather than its physical properties, that determined if it was a cause of cancer and other problems. Long, very narrow fibers that could penetrate deeply into lung tissue and remain there, causing tumors, are the main cause of concern, according to this research. It did not matter if the fiber was made of a natural mineral such as asbestos, or a synthetic fiber such as fiberglass, the researchers said.

In recent years manufacturers of synthetic mineral fibers have been making them thinner to increase their insulating properties.

Dr. Irving J. Selikoff, the noted asbestos authority at Mount Sinai Hospital in New York, said that there were not enough data to make a definitive statement about the health effects of fiberglass but that "some serious questions have to be asked because this is a terribly important problem." One major unanswered question, he said, involves the dangers to those who install and use products made of these fibers, as well as to the workers who make them.

Fibers Virtually Unregulated

The Labor Department's Occupational Safety and Health Administration now classifies these fibers as "nuisance dust" that is virtually unregulated. The agency has no immediate plans to change its standard because there is not enough evidence to warrant such a change, according to Charles E. Adkins, the Occupational Safety and Health Administration's director for health standards programs.

But other Federal public health officials believe that if the evidence proves correct, exposure to these fibers would have to be controlled as stringently as exposure to asbestos. "We are giving this a very high priority," said Richard A. Lemen, director of policy for the National Institute of Occupational Safety and Health, or NIOSH, a research arm of the Department of Health and Human Services.

Mr. Lemen noted that in 1977, NIOSH had proposed that limits be placed on exposure to these fibers to protect workers from eye and respiratory inflammation. The Occupational Safety and Health Administration has never acted on the recommendation, but Mr. Lemen said the emerging evidence about cancer meant that the issue should receive careful reconsideration.

Richard Munson, founder and chairman of Victims of Fiberglass, a group based in California, insisted that OSHA act immediately to reclassify the synthetic fibers as possible carcinogens. Mr. Munson, a businessman who markets cellulose insulation, which competes with fiberglass, said the use of these manufactured fibers in millions of buildings throughout the country "presents a public health problem of enormous dimensions."

J. Corbett McDonald, a professor of epidemiology and occupational health at McGill University in Montreal and

London University in Britain, said: "There are reasons why we should be a little cautious scientifically about this. The case is not proven. But that is the scientific issue. The public health issue is different. I personally think that it would be wrong not to treat it seriously. I would go further and say I think we would be wise to treat all mineral fibers as posing a threat."

At a meeting in Copenhagen last October sponsored by the World Health Organization, three epidemiological studies were presented by researchers

Deep penetration of lung tissue may be a crucial factor.

from the United States and Europe. The studies suggested that some workers who had been exposed to synthetic mineral fibers for 30 years or more had contracted lung cancer. The studies covered 45,000 workers.

Sir Richard Doll, a highly respected British scientist known for his skeptical views about environmental causes of cancer, said in summing up the findings that the number of cancer deaths was in excess of "expected numbers" by a small but "numerically significant" amount.

Philip E. Enterline, co-author of the United States epidemiological study, which looked at mortality records among production and maintenance workers in 17 of the oldest and largest synthetic mineral fiber plants in this country, said that while more work needed to be done on the contribution of factors such as smoking to the cancer death rates, "the evidence is very suggestive."

Dr. Enterline, professor of biostatistics at Pittsburgh University's School of Public Health, said in a telephone interview, "All the answers are not in yet." But he added that the excessive cancer rates were "surprising" given the relatively low levels of exposure.

"It may yet turn out that these fibers have to be controlled the way asbestos is controlled," said Dr. Enterline.

A study published last year by scientists from NIOSH and Battelle Laboratories found fibrous glass caused a significant increase in leukemia in laboratory rats and raised the possibility that the fibers might damage the cellular immune system of the rats.

Several studies have shown that implanting synthetic mineral fibers in the lungs of laboratory animals produced tumors in those animals.

Dr. Robert Anderson, corporate medical director of the Manville Service Corporation, said the epidemiological studies on workers exposed to fiberglass and other fibers had demonstrated no specific relationship between lung cancer and the duration and intensity of exposure to the fibers.

"It is our feeling that it probably was not the fiber that caused the small increase in lung cancer," he said.

Robert C. Doban, senior vice president for science and technology of Owens/Corning Fiberglass, described two studies, one of them by the Los

Alamos National Laboratory, of animals forced to breathe air containing high levels of synthetic fibers. Unlike the animals that had the fibers implanted in their lungs, the animals that breathed the fiber-laden air did not develop lung tumors, he said.

Industry Cites Differences

The industry officials said fiberglass and most of the other synthetic fibers were different from asbestos in several important ways. For one thing they are thicker and do not penetrate the lung as deeply. And these fibers tend to be more soluble and tend to dissolve in human tissue before they cause tumors, they said.

The officials also dismissed the research that indicated the synthetic fibers might cause damage to the cellular immune system and leukemia, saying that no suggestion of these problems appeared in the epidemiological studies.

"The truth of all this is that the fibers are safe," Mr. Doban said. "The overwhelming body of evidence doesn't show a connection between the fibers and disease."

Mr. Anderson of Manville Service added, however, "We are dedicated to looking at this product more intensively than any product has been looked at in the past."

Dr. David L. Dull, acting director of the chemical control division of the Environmental Protection Agency, said the evidence showed that, with the possible exception of ceramic fibers, synthetic mineral fibers "are a lot less risky than asbestos." But he added, "Some evidence suggests we ought to treat it as a serious problem and regulate it like asbestos."

Noting that exposure to asbestos is now limited by law and exposure to synthetic fibers is virtually uncontrolled, he said, "If I had a choice of being exposed to asbestos at current exposure levels and to respirable man-made fibers, I would breathe asbestos every time because the exposure limits are so much more stringent."

LAM 002159

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