

Asbestos dust is linked to disease

PLAINTIFF'S EXHIBIT

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BREATHING asbestos dust causes or is associated with three diseases—*asbestosis*, lung cancer, and *mesothelioma*. Scientists have also found some evidence linking asbestos exposure to gastrointestinal cancer.

Asbestosis is one of a group of lung diseases called *pneumoconioses* caused by dust inhalation. It is similar to black lung contracted by coal workers from breathing coal dust.

Asbestosis starts when inhaled asbestos fibers are trapped in the lower portion of the lungs. The asbestos is indestructible in the lung, and normal lung-cleaning mechanisms don't work. The lungs become scarred, and the scarring, which can be seen with an X-ray, reduces the amount of space in the lungs where circulating blood can pick up oxygen. In extreme cases, a disabling shortness of breath results. In addition, there may be a strain on the heart in its effort to pick up sufficient oxygen to circulate enough blood.

The time between the first exposure to asbestos and the first manifestations of *asbestosis* averages 17 years and is called the latency period. According to studies by Dr. Irving J. Selikoff of Mt. Sinai School of Medicine, approximately 1 in 10 asbestos workers dies from *asbestosis*. There is no cure.

Lung cancer, according to Dr. Selikoff, accounts for 2 in 10 deaths among asbestos workers. This is more than 5 times the expected rate in the United States population. Dr. Selikoff also found that smoking greatly increases the risk of lung cancer among asbestos workers. Asbestos workers who smoke have 8 times the risk of lung cancer compared to asbestos workers who do not smoke, and 90 times the risk of people not exposed to asbestos and

who do not smoke. The latency period for asbestos-related cancer is 20 to 30 years.

Mesothelioma is a rare cancer of the pleura (lining of the lungs and chest cavity) or peritoneum (lining of the abdominal cavity). In the 1960's, scientists estimated that *mesothelioma* caused only 1 in every 10,000 deaths. In contrast, Dr. Selikoff found among asbestos workers *mesothelioma* causing 1 in every 10 deaths. The latency period for *mesothelioma* is 30 to 40 years. Many of the arguments for a zero-fiber limit on asbestos are based on reports that even single or occasional exposures to asbestos may cause *mesothelioma*.

Gastrointestinal cancers of the stomach, colon, and rectum have also been associated with asbestos exposure. In one study, Dr. Selikoff reported 29 of 255 deaths among asbestos workers due to gastrointestinal cancer. Only 9.4 deaths from these cancers would be expected from a normal group of 255 men selected at random.

Scientists disagree

Although the first reported case of *asbestosis* occurred in 1906, most of the current knowledge on asbestos was developed during the last 10 years. Despite recent progress, however, several medical mysteries about asbestos-related disease remain.

There are three types of asbestos most used commercially. Each has a different chemical formula and each, some scientists think, has different cancer causing abilities. *Chrysotile* asbestos accounts for 95 percent of asbestos used commercially in the United States and appears to be the least likely to cause *meso-*

thelioma. *Crocidolite* and *amosite* asbestos, also used commercially, appear to be more dangerous. Scientists cannot explain the difference.

Scientists also don't know how asbestos causes cancer. Some scientists think that somehow the structure of the asbestos fibers themselves causes cancer. Others think that trace metals in the asbestos are the cause. Nickel and chromium, known carcinogens, are common impurities in asbestos. One school of scientists hold that asbestos may work as a cocarcinogen, and, with another agent such as cigarette smoking bring on cancer.

The mystery that most divides scientists is the reported higher rates of asbestos-related disease among workers employed in manufacturing and construction than among a comparably exposed group of workers employed in mining and milling. Dr. Selikoff's studies of asbestos insulation and factory workers show death rates 25 to 50 percent higher than a comparable but non-exposed group of workers. In contrast, Dr. J. Corbett McDonald of the Department of Epidemiology and Health at McGill University, in a study of mining and milling workers in Quebec's *chrysotile* asbestos mines, found the overall death rate among asbestos workers slightly lower than the normal death rate for the province. In the highest dust category in McDonald's study, comprising 5 percent of the persons studied, he found the death rate only 20 percent higher than for a normal population. Dr. Selikoff found 22 cases of *mesothelioma* among 632 asbestos workers in his study. Dr. McDonald found only 3 cases among 9,981 workers in his study. Scientists cannot explain the difference in results.

OSHA: Safety manager's



**Friend:
"OSHA
is a plus
for safety"**

DAN Dudrow, corporate manager of safety and plant protection for Uniroyal, Inc., says OSHA has enriched his safety program.

Dudrow applauds OSHA for pushing safety out of the wings onto center stage in industry. He is confident that OSHA has produced an intensified awareness of safety among plant management and workers that will bring important future advances in safety.

"When OSHA achieves its goals, there will be a substantial reduction in this country's industrial accident rate and resultant savings to industry in decreased costs of workmen's compensation, lost time, and down time," said Dudrow.

Although Dudrow looks for OSHA to have its greatest impact ultimately on smaller companies which traditionally have been weak in safety, he believes OSHA is also

aiding large companies with long-entrenched, strong safety programs. Dudrow offers his own company in evidence.

"Uniroyal has had a corporate safety office for 50 years and top management has always been strong on safety," said Dudrow. "As the safety and health field expanded during the 1960's, the major thrust of our program was encouraging greater involvement of all plant management in safety. We hammered away to change the old attitude that safety should be left to the safety specialist in the plant.

"The advent of OSHA accelerated this attitudinal change among our managers. Since OSHA, plant managers have exerted more leadership in their plant staff safety committees. Managers in every department increasingly seek out our safety specialists and work with them to eliminate safety and health hazards, he continued.

"This growing management awareness can pay big dividends in safety. In the past, I've seen mediocre safety programs make tremendous strides forward in a short time once plant management became truly involved in safety," said Dudrow.

More responsible

OSHA has also left its imprint on workers.

"OSHA has made our entire safety sell to employees much more persuasive. The employees see us in the plants taking surveys and making improvements. They know that OSHA has given them new rights. They are more aware of safety, and of their responsibility to work safely as a result. They know now that what we've been telling them is important. They know we're not asking them to do something other employees of other companies are not being called upon to do," he said.

Employee complaints initiated only one of the 11 OSHA inspec-

tions of Uniroyal facilities. Dudrow sees this as evidence that employees are not abusing their rights under OSHA and that they are cooperating with plant management to solve safety and health problems.

Long-term benefits

Dudrow credits OSHA for the growing management and employee awareness.

"In 1971 and 1972, Uniroyal's accident rate rose above the 1970 levels," said Dudrow. "This was a nationwide phenomenon, not confined to Uniroyal; and many factors were involved. Our business was expanding and production accelerating. We hired many new and young workers. We built plants in areas where people did not have industrial working experience. And, I think, to some extent, adjusting to OSHA may have distracted us from other parts of the safety program.

"This year our rate of increase of accident frequency has slowed, due in part, I believe, to increased support for safety among management and workers in the plants. In the future, I think we'll reverse the accident trend and decrease accident frequency. Certainly OSHA will have a part in that," said Dudrow.

Health emphasis

Dudrow sees other benefits stemming from OSHA.

"OSHA brought about an information explosion in safety," said Dudrow. "Some of the information has always been available but not widely circulated. Much of it is new. Our job now is to collect and compile this information for the people in our plants who can use it.

"OSHA has also focused increasing attention on occupational health—for a long time the weak spot in many programs. Our understanding is improving about what to look for;

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