Asbestos Information Association North America

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October 2, 1973

MEMORANDUM FOR MEMBERS

SUBJECT: Items of Interest

The attached are forwarded for your information:

a.) Nader-Harris article in Environmental Action, September 15, 1973, "Asbestos in Lake Superior".

b.) Article from American Industrial Hygiene Association Journal, May 1973, "Asbestos, Talc and Nitrites in Relation to Gastric Cancer".

R. H. Mereness
Executive Director

Attachments

01-0205368

Asbestos: It's everywhere

The Lake Superior experience should serve as an ominous warning of the public health disasters we can expect if we continue to spew asbestos recklessly into the environment. Unfortunately, ashestos is one of the most ubiquitous substances found in our industrialized society. It has over 3000 industrial uses and is found in well over 300 consumer products. Since 1900, world production of asbestos has increased 1000 times as more uses have been found for it.

Although there is no absolute proof as to whether asbestos levels in urban air or in the liquids we consume represent a hazard to the public, it is known that those who work with asbestos face severe occupational health hazards. Asbestos has presented a known workplace health hazard since the turn of the century. Workers in asbestos textile and insulation plants often died of asbestosis before reaching middle age because so much asbestos had accumulated in their lungs that they could no longer breathe. Since 1918, six years before the first report of asbestosis appeared in medical literature, American and Canadian life insurance companies routinely declined to insure asbestos factory workers.

After the advent of the first crude in-plant dust control systems worker exposure to asbestos dust was reduced and, although many employees still died of asbestosis, they lived longer on the average. As the spectre of asbestosis began to recede, cancer soon became the major cause of death among asbestos workers. In fact, today cancers of the lung and stomach are the cause of death for 45 percent of all asbestos workers.

An extreme account of asbestos exposure, reported by G.W.H. Schepers in 1949, describes what can happen when no controls are placed on worker exposure to asbestos dust. The workers described are young Bantu children who worked in British-owned asbestos mines in South Africa:

". . . I found young children completely enclosed within large shipping bags, trampling down fluffy amosite asbestos, which all day long came cascading down over their heads. They were kept stepping lively by a burly supervisor with a hefty whip. I believe these children to have had the ultimate of asbestos dust exposure. X-rays revealed several to have radiologic asbestosis with corpulmonale (right heart failure) before the age of 12."

Dr. Schepers went on to speculate that the reason a 1959 survey contained no mention of these children was that they had all died by then.

The case just described is a severe one, but the same dangers, albeit on a smaller scale, await asbestos workers and consumers of asbestos-containing products. The Department of Labor has established a protective standard for workers, although, as is the case for most workplace standards, it is not well enforced. There is still no regulation demanding hazard labeling on friable asbestos products sold in hardware stores. (Friable means that the asbestos easily flakes off.) Thus, workers and homeowners alike can be exposed to asbestos.

The citizen activity surrounding the Lake Superior-Reserve Mining situation is not isolated. Several public interest groups and labor unions have begun to mount a campaign aimed at forcing federal regulatory agencies to enforce laws which will curb asbestos exposure. Some of these actions include:

- The AFL-CIO's Industrial Union Department and the Environmental Defense Fund (EDF) are now suing the Department of Labor to demand that it strengthen its demonstrably inadequate occupational standards.
- A number of public interest groups, including EDF and the Center for Science in the Public Interest (CSPI) are suing the Environmental Protection Agency for major deletions and loopholes in its newly-issued asbestos standard.
- CSPI recently petitioned the Federal Trade Commission to undertake a survey to ferret out all asbestos-containing consumer products and to require disclosure of asbestos as an ingredient.
- CSPI and EDF have petitioned the Food and Drug Administration to ban the use of asbestos as a filtering material. Asbestos filters are used by some beer, wine and distilled spirit manufacturers, soft drink manufacturers and some producers of edible oils.
- CSPI is coordinating electron microscopic analyses to determine the degree of contamination asbestos-cement pipes cause in drinking water. This effort has led to the development of improved methods for determining the presence of asbestos in water. Because of the dust hazard to utility maintenance workers and the longer life and greater strength of cast iron and prestressed concrete pipe, CSPI advises towns to discontinue using asbestos-cement piping.

Although you may not live near Lake Superior, or even work in an asbestos factory, you may still be exposed to asbestos. It is important that citizens begin to become aware of potential asbestos exposure. For instance, be on the lookout for consumer products containing friable asbestos. If you suspect that a hardware store product contains asbestos, read the label. If there is no label, ask the salesman, or, if necessary, write to the manufacturer. Ask local hardware stores to remove asbestos powder, asbestos impregnated wallboards and other friable products from their shelves.

Check home pipe and boiler insulation and see that the surface is not broken. You can buy resin-impregnated cloth to rewrap the pipe insulation.

Find out whether the building you work in has uncovered asbestos fireproofing in the recirculation air ducts or on the ceiling. If so, have a sealing applied. Ask local brewers, distillers and processors of beverages and edible oils if they use asbestos-containing filters.

If there is an asbestos mine, mill or manufacturing plant near you, find out what it discharges into the air and water. (There are recorded cases of asbestos-plant neighbors who have died from rare "asbestos cancer.") Are there open asbestos dumps nearby? Are ore-carrying trucks covered with tarpaulins?

Although we know little about the dangers of many of the applications of asbestos, we still should err on the side of prudence rather than public health. The public has the right to expect the burden of proof to come from those who manufacture products containing potentially toxic substances like asbestos. Barry Castleman and Albert Fritsch.



Reserve's waste asbestos is going into the air as well as the water, as shown in this 1969 photo of the company's smoke plumes. Only two measurements of airborne asbestos pollution have been made in Silver Bay – and both were higher than that recorded anywhere else in the U.S. (photo courtesy EPA)

Selikoff who by then had been retained by EPA to corroborate their work and to study the asbestos content of tissues taken during autopsy of Duluth residents. But rumors began to spread, and under pressure from environmentalists and the press, EPA decided to alert the public to the presence of asbestos but to recommend only that pre-school children switch to bottled water, a decision founded on the fear that a more inclusive recommendation would "panic" the residents of Duluth. Dr. Selikoff, the nation's leading expert on asbestos hazards, had recommended that persons who were previously "unexposed" should also be warned not to drink Lake Superior water. His personal convictions were strikingly evident at a press conference held on June 19. When asked if he would be drinking the water while in Duluth, Selikoff answered, "Not knowingly – however, I must admit that my memory slipped this morning and I did have coffee." In that same press conference, Dr. E. Cuyler Hammond of the National Cancer Society, a leading authority on cancer epidemiology, responded similarly to the same question: "Well, I cleaned my teeth and I drank some water afterwards, having completely forgotten about it this morning." That these cancer experts, along with other scientists, will not drink Duluth water is an omen that apparently has gone unheeded by EPA and county and state Department of Health officials.

Largely because of the overly cautious attitude adopted by EPA and the state and county Departments of Health, most of Duluth's residents remain unperturbed today that the Lake Superior water they have held so sacred all these years may be detrimental to their health. Statements such as, "I've been drinking this water for 35 years and I'm as fit as a fiddle," are common. Although bottled water sales increased rapidly subsequent to the EPA announcement, the current level of sales indicates only a small fraction of Duluth's residents have switched despite warnings. The situation is further compounded by the fact that much of the bottled water comes from nearby Superior, Wisconsin, whose underground wells are replenished by Lake Superior. This water has also been shown to be contaminated with asbestos. Thus even parents who follow the official advice and provide bottled water to their pre-school children may not be able to avoid the hazard.

Refusal by most food and beverage manufacturers and restaurants to switch to an alternate source of water also helps assure that area residents will continue consuming asbestos. A notable exception is Jeno's, Inc. (of Jeno's Pizza) which immediately switched to well water upon learning of the asbestos contamination. However, most of the area's food and beverage manufacturers, including American Bakeries (Tastee Bread), Zinsmaster Bakeries (Master Bread), Coca Cola, Pepsi Cola and Elliot Meatpacking Company, also ship in interstate commerce, thereby exposing residents outside of Minnesota to the asbestos. The U.S. Food and Drug Administration (FDA) has direct responsibility for protecting the health and safety of consumers in such matters including the prohibition of carcinogens from food. FDA officials in Washington decided to take no action in this case, however because in the words of one official, the problems with food are "not as serious as with drinking water." Neither FDA officials nor St. Louis County (Minn.) Department of Health officials were even aware at that time that beverages, such as the Coca Cola product line, were bottled in Duluth. One can only speculate as to how much asbestos is consumed by the "soft drink generation" children of Duluth or nearby Wisconsin.

The fate of residents along the shores of Lake Superior who have been breathing and drinking the asbestos for the past 17 years remains to be seen. Although Dr. Selikoff and other scientists are attempting to predict their fate by analyzing asbestos levels in human tissues, it may be months before the results of their studies are released and even then their findings may be inconclusive. In the meantime, whether Reserve Mining Company will be allowed to continue its environmental abuses will apparently be decided by one man, Judge Miles Lord, who is hearing the United States suit in federal court in Minneapolis. The Environmental Defense Fund (EDF), represented by attorney Scott Lang, has intervened on the side of the United States against Reserve, although EDF has alleged violation of state and federal asbestos air pollution laws and has asked for a preliminary injunction against Reserve's discharge of asbestos to the air and to Lake Superior, a request which EPA refuses to support. In a separate suit, EDF has cited EPA and the MPCA for failure to utilize their emergency powers to protect the public health until results from scientific testing are more conclusive. Largely as a result of EDF's intervention, the MPCA has recently amended its complaint to allege violation of state air pollution laws and to join EDF in seeking a preliminary injunction. However, at this writing, testimony is still being heard by Judge Lord; Reserve continues to release significant amounts of asbestos to the air in Silver Bay and 67,000 tons per day of asbestos-containing tailings to Lake Superior; and more than 150,000 residents bordering the lake continue to ingest and breathe high levels of asbestos that may eventually cause their death. □

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American Industrial Hygiene Association Journal

Industrial Hygiene Summary Reports

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Asbestos, Talc and Nitrites in Relation to Gastric Cancer

Recently, Merliss[1] suggested that the high incidence of gastric cancer in Japan may be associated with treatment of rice with talc in Japan. He noted that some commercial "talcs" contain asbestos, which he proposed as an etiologic agent in gastric cancer. Merliss cited a report of a small excess of gastric cancer in a group of insulation workers exposed to dusts containing asbestos and a larger excess of pulmonary carcinomas and pleural mesotheliomas in miners who appear to have had mixed exposures to asbestos and talc. He noted that some geologic deposits of talc are associated with tremolite, anthophyllite and chrysotile varieties of asbestos, accounting for the presence of fibrous particles of asbestos together with platy particles of talc in some commercial preparations of "talc."

Our group has carried out tests for carcinogenicity of various preparations of asbestos through experiments with animals. The present paper summarizes some results and reports a new experiment with a preparation of talc containing asbestos. A possible alternative mechanism involving nitrites in gastric carcinogenesis is discussed.

In 45 hamsters maintained throughout their lives on diets containing 1% of the chrysotile or amosite varieties of asbestos, we found no gastric carcinomas and no tumors in the gastrointestinal tract except for a neoplasm in the mesentery of the colon.[2] We are unable to relate that lesion to the treatment, since ashing has revealed no asbestos fibers in it.

After intrapleural injection of 25 mg chrysotile or amosite into hamsters, we reported tumors diagnosed as pleural mesotheliomas.[2] Eight to 10 such tumors were found in each of 3 groups of 50 hamsters treated at this dose level.[3]

We have now completed an experiment in which the hamster-intrapleural method was used to test for carcinogenicity of a sample of talc containing asbestos. For this work, we obtained samples of commercial talcs from Whittaker, Clark & Daniels, Inc., New York City. A sample of cosmetic talcum powder grade was seen by microscopic examination to be composed of platy particles typical of the mineral, talc (hydrous magnesium silicate). Another sample of a grade used for some industrial purposes ("=13 Talc") was found to be a mixture of platy and fibrous particles. X-ray diffraction analysis revealed the presence of major amounts of tremolite asbestos and talc and a minor amount of a serpentine mineral (antigorite).

Each of 50 hamsters were given right intrapleural injection of 25 mg of this sample suspended in 0.5 ml saline. The animals were followed for their life spans. No tumors attributable to the treatment were found. Granulomatous lesions were com-

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mon on pleural surfaces, but these lesions tended to be small and focal in contrast to larger and more fibrotic lesions induced in hamsters by chrysotile or amosite.

The negative results of this test for carcinogenicity of a talc containing asbestos, and our earlier test on feeding asbestos to hamsters, do not offer support to the view that asbestos-containing talc contributes to the incidence of gastric cancer in Japan.

Although death rates reported for gastric cancer are notably high in Japan in comparison to other countries, the highest reported rate comes from Chile.[4] Studies of gastric cancer in Chile have been reported from our laboratory with an hypothesis that high rates for esophageal and gastric cancer may be due to conversion of nitrates to nitrites by soil bacteria with subsequent synthesis of nitrosamine carcinogens in plants used as food or through interaction in the stomach with secondary amines in food.[5]

Chile has the world's largest known geologic deposits of nitrates, which are used as fertilizers. Nitrosamine has been reported in wheat plants and wheat grains.[6] Nitrosamines can form through interaction of nitrites with secondary or tertiary amines in the stomach, and have been shown to induce esophageal and gastric cancers in rats.[7,8] High concentrations of secondary amines have been reported from Japan in dried fish.[9]

The situation invites attention to a potential role of the nitrogen cycle in environmental carcinogenesis. A source for direct ingestion of nitrites by human populations arises from use of nitrites as food additives. Other potential factors in gastric carcinogenesis have been recently reviewed by Haenszel *et al.*[10] who found no support for the talc-asbestos hypothesis on epidemiologic grounds.

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