

UNION CARBIDE

Mr. W. C. Thurber
Metals Division
270 Park Avenue
38th Floor

June 6, 1975

Medical Department

4th Floor

Public Information Pamphlet
on Asbestos and Water

Dear Mr. Thurber:

Both Dr. Ken Lane and I agree that this is well done. We believe it to be factual with no exaggeration.

Very truly yours,

John J. Welsh, M.D.

JJW:BA

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AIA NORTH AMERICA
ASBESTOS INFORMATION ASSOCIATION
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xc
JLM
HBR
RFXF
Dr. Welsh
Comments please
by 6/9.
WCT

28 May 1975

Memorandum For: Mr. F. J. Solon, Jr.
Members Public Relations and Communications
Activity Area (Messrs. Thurber, Morgan, Rainey
and Riopelle)

Subject: Public Information Pamphlet on Asbestos and Water

As you are aware, the Association is publishing a number of materials in keeping with our information and education program. The pamphlet, "Asbestos in the Atmosphere, A hazard to health?", is now at the printers and will be available for distribution at the forthcoming meeting of the board of directors on June 5. The companion piece to this publication, "Asbestos in Water, A hazard to health?", has now been prepared in draft and is forwarded herewith for your comment.

We would like to expedite printing this latter pamphlet and will appreciate receiving your comments at your earliest convenience.

R. H. Mereness
Executive Director

Enclosure

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ASBESTOS IN WATER: DRAFT

A hazard to health?

In analyses of water supplies in various sections of the world infinitesimal amounts of asbestos fiber have been found upon occasion, along with other particulate matter. The fibers come primarily from natural sources, and secondly from man's activities, including the mining and milling of asbestos-bearing rock and the manufacture, use and disposal of some asbestos-containing products. Asbestos fiber also has been detected in some beverages and parenteral (injectable) drugs filtered through asbestos-containing filters. There is no evidence, however, that any individual has ever been harmed by the ingestion or injection of liquids containing these microscopic amounts of asbestos.[1] Nevertheless, the asbestos industry is constantly improving its control of waste water emission sources and processing procedures as part of a worldwide commitment to reduce any form of environmental contamination.

Asbestos Serves the World

Asbestos, used since antiquity, has widespread and important applications. Because of its remarkable resistance to fire, heat, friction and corrosion along with other unique properties, approximately 3,000 different products containing asbestos are in daily use throughout the world. The product lines range from pot holders to brake linings, from asbestos cement pipe and building materials to packings, gaskets and filters used daily throughout the world. In the vast majority of these products, the asbestos is "locked-in" with cement, resins or other binders so that the fibers are not easily released during normal handlin or use, except in machining operations. In 1974, nearly 850,000 tons of asbestos, primarily chrysotile asbestos from Canada, was used in the United States. Worldwide production is about 5 million tons.

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Health Questions Arose

In late 1967, the U. S. Public Health Service was asked to look into the question of a potential health hazard from asbestos fibers in water supplies, especially as it might be related to the risk of gastrointestinal (GI) cancer. By this time, it had been established that the inhalation of excessive quantities of asbestos fiber in occupational settings could lead to increased risk of respiratory disease and certain types of cancer among industrial workers. Speculation about a possible public risk was heightened by findings of small amounts of asbestos fiber in some drinking water supplies and more recently in certain beverages and parenteral drugs.

Ingestion and Injection Experiments

Both human evidence and animal experimentation regarding a possible relationship between excessive asbestos exposure and an increased risk of gastrointestinal cancer is scanty and contradictory.[2] Some reseachers have reported higher-than-normal rates of gastrointestinal cancer among industry groups heavily exposed to airborne asbestos.[3] Several major animal feeding experiments, however, produced no tumors in the gastrointestinal tracts of the animals, even though the amounts of fiber fed to the animals were massive when compared with human occupational exposures known to result in respiratory disease.[4]

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While some injection experiments have produced site and mesothelial tumors in test animals, the amount of fiber used in each case was so large as to render any attempted translation to human experience completely inappropriate. The tests strongly suggest that injection or implantation of cancers in test animals are directly related not only to dose but, even more importantly, to the size of the fiber used in the experiment. Electron microscope sized fibers did not produce tumors in the test animals.[5]

Medical opinion on the subject of gastrointestinal cancer and heavy occupational asbestos exposure is divided. Some experts consider the evidence inconclusive while others believe that a "small risk" may exist.[6,7]

Asbestos - Cement Pipe

Since considerable quantities of asbestos-cement pipe had been used to convey potable water for more than half a century in North America, Europe and other parts of the world, the question was raised as to the possible health hazard of drinking water that flowed through the pipes.

If there were a relationship between GI cancer and the use of asbestos-cement pipe there should have been an increase in the cancer rate as the use of the pipe increased. Yet, U.S. Public Health Service records show that the incidence of gastrointestinal cancer in the U.S. has steadily been declining in a period when asbestos-cement pipe sales have been increasing.[8]

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In a study of drinking water in nine cities that used asbestos-cement pipe for periods ranging from 8 to 17 years, not one of the water samples, either before or after passing through the asbestos-cement pipe, contained fibers that were visible under a light microscope. The highest asbestos content per gallon of water tested was 6 micrograms, about one five-millionth of an ounce. This means that if a man were to drink eight glasses of water a day he might swallow a total of twenty-seven ten-thousandths of an ounce (.0027) of asbestos in a lifetime of 70 years.[9,10]

After reviewing the available evidence, a special committee of asbestos health experts put together by The American Water Works Association Research Foundation concluded that the "risk to health from the use of (asbestos-cement water pipe) systems is small -- approaching zero."[10]

Reserve Mining Case

Perhaps the most widely publicized alleged health hazard from asbestos in water is the case of the EPA vs. Reserve Mining Company. What began as a relatively simple case involving the disposal of waste taconite tailings into Lake Superior turned to a health issue when it was claimed that the tailings contained cummingtonite, a form of asbestos.

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During the case, large numbers of experts were called on for testimony including the court-appointed witness, Dr. Arnold L. Brown, chairman of the department of pathology and anatomy, Mayo Clinic, Rochester, Minnesota. Dr. Brown in stating that there is no evidence of an excess of cancer in Duluth, Silver Bay, or other North Shore communities, testified:

"Scientifically and medically I see no evidence for an increased incidence of cancer in those communities that could be attributed to the presence of asbestos fibers in air or water."[11]

Early in the trial a study of tissues was made of deceased Duluthian's to determine whether or not asbestos fibers were present. These extensive tissue studies failed to disclose any amphibole fibers which could have come from Reserve during the subjects' lifetimes. The subjects were selected by Court witnesses as representative and included tissues only from persons inhaling Duluth air and ingesting Duluth water in excess of 15 years.[12]

Summarizing the medical testimony, a Reserve Mining Company brief to the Appeals Court said, "there is no evidence that ingestion of asbestos in any amount has ever caused disease in anyone. Thus, there is no evidence that Reserve's discharge into Lake Superior (whether or not such discharge contains any asbestos) constitutes a present or future likelihood of disease."[13]

In March 1975, the Eighth Circuit Court of Appeals in a final ruling on the case ordered Reserve to comply with all air and water discharge directives, but said that "the evidence is insufficient to support the kind of demonstrable danger to the public health that would justify the immediate closing" of the facility, although the discharges did pose a "potential" risk.

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Asbestos Filters

As asbestos-containing filters have been in wide-spread use throughout the world for many years, questions arose that ingestion of beverages or food containing electron microscope-size mineral fibers, including asbestos, might expose large populations to a potential hazard. Numerous studies have shown that despite their long-term use there is not one scintilla of evidence that anyone has ever contracted GI cancer or mesothelioma from drinking a beverage filtered through an asbestos filter or injected with a drug filtered in the same fashion.

Asbestos exists naturally in small though detectable amounts in serpentine rock formations throughout the world. Thus, a measurement of the normal "background" level provides a means of comparing the levels in beverages, and drugs filtered through asbestos-containing filter pads. Studies here and abroad have consistently shown that the asbestos content of various soft drinks, beers, wines and parenteral drugs tested to be no more than or, in many cases, less than the natural background level of asbestos detected in water in that particular country.[14,15]

Preliminary results of a survey made for the Food and Drug Administration confirmed these earlier studies and showed that the use of asbestos-containing filters bears no relationship to the presence of asbestos fibers in the finished product.[16] Thus, it is unlikely that the elimination of asbestos filters in the production of parenteral drugs will result in any reduction in asbestos content of the finished product.

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Governmental Action

In September, 1973, the Food and Drug Administration published a notice proposing to restrict the utilization of asbestos filters in the manufacture of parenteral drugs and parenteral drug ingredients. After careful review of the scientific evidence and an analysis of comments from numerous experts the FDA announced in the Federal Register of March 14, 1975, that the Commissioner had concluded that "promulgations of regulations on the limitations or prohibition of the use of asbestos filters for the preparation of foods and non-parenteral drugs ... is unwarranted until more reliable data can be obtained, concerning these matters."[17]

In addition, over the past two years the Environmental Protection Agency has promulgated national waste water emission standards for asbestos manufacturing operations to control the potential discharge of asbestos-bearing waste into our nation's waterways. These regulations were, in general, supported by the asbestos manufacturing industry in the United States.

No Risk to General Public

From the foregoing it is clear that there is no risk to the public from the microscopic amounts of asbestos found in some drinking water and in some beverages and parenteral drugs filtered through asbestos-containing filters. This conclusion was strongly reinforced in a report issued in 1973 by the Advisory Committee on Asbestos Cancers of the International Agency for Research in Cancer,

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a division of the World Health Organization. When asked if there were evidence of an increased risk of cancer resulting from asbestos fibers present in water, beverages, food or in the fluids used in the administration of drugs, this group of the world's leading authorities in the field of biological effects of asbestos replied:

"Such evidence as there is does not indicate any risk." [18]

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Summary

To summarize briefly:

1. Asbestos exists naturally in small though detectable amounts in serpentine rock formations throughout the world and is constantly being released into the environment through erosion by wind and water, and has been for millions of years.

2. The Advisory Committee on Asbestos Cancers of the International Agency for Research in Cancer has stated evidence does not indicate any risk of cancer resulting from asbestos fibers present in water, beverages, food or fluids used in the administration of drugs.

3. The evidence for a relationship between heavy occupational asbestos inhalation and increased risk of gastrointestinal cancer is inconclusive.

4. There is no existing evidence of a relationship between gastrointestinal cancer and drinking water carried through asbestos-cement pipe.

5. No correlation has been demonstrated between the use of asbestos filters and the presence of excessive asbestos fibers in the finished product.

6. The levels of asbestos found in beverages, drugs, etc., have not been shown to be hazardous to human health. 03436

* * *

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11. From testimony by Dr. Arnold Brown in Federal District Court as quoted in Congressional Record, January 29, 1975, p. S1179.

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16. Report to the Acting Director, Bureau of Drugs by Dr. J. Richard Crout, 1973.

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Additional copies of this pamphlet are available:

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