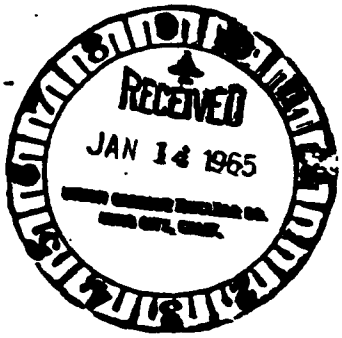


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MEMORANDUM

January 12, 1965

PLAINTIFF'S EXHIBIT
UC-5142

To: Messrs. T. Dougherty
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cc: Messrs. K. W. Lentz
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Dr. C. U. Dernehl

Subject: ASBESTOS TOXICOLOGY REPORT

Gentlemen:

Recently several reports were given at technical meetings and summaries of them carried by the national wire services concerning possible carcinogenic properties of asbestos. Some of you may have received questions from your customers on this subject.

In order to counteract any serious problems or worries before they get out of hand, we have asked Dr. C. U. Dernehl, Director of Toxicology, Union Carbide Corporation, to formulate a statement for us. A copy of his statement is enclosed. Additional copies can be obtained from me or you may make your own copies if you wish to pass them on to interested customers. You will note that, in essence, the report states that good housekeeping -- such as would be required in any dust-producing operation -- should be sufficient to prevent any problem with asbestosis. You will also note that he mentions use in a wet system -- which certainly applies to the paper mill -- and a pellet form -- one of the strong points of our asbestos -- as additional means of minimizing any potential problem with the product.

Further, other asbestos producers and those acquainted with the subject feel that the original data upon which the cancer-producing report was based did not take into account any outside influences, such as smoking or corrosive atmospheres, which also might produce cancer. Here, it should be noted that much asbestos usage considered in the technical papers is in conjunction with tar and pitch compounds which are known to contain carcinogenic materials.

You should have this statement available for any questions which might arise from your customers. If appropriate in your judgment, perhaps it should be discussed with certain customers who have not yet raised the subject. I do not feel we should make a big issue of it thereby drawing unnecessary attention to the subject since the conclusions are still questionable.

If you have any questions, please discuss them with me.

Very truly yours,

Thomas J. Hall

T.J.Hall/dk

enc.

UNION CARBIDE CORPORATION
270 PARK AVENUE, NEW YORK, N.Y. 10017

ASBESTOS TOXICOLOGY REPORT

It has been known for many years that some persons working in asbestos production were prone to develop a disabling lung disease. In time, this condition became known as asbestosis and was related to exposure to high concentrations of asbestos dust. With further experience, it was found that men could work with asbestos without development of lung disease if dust concentrations were kept below a certain level. It is now generally accepted that a man can work a 40-hour week for a lifetime without developing asbestosis if the asbestos dust particle count is kept at or below 5 million particles per cubic foot of air. This dust concentration of 5 million particles per cubic foot of air is the Threshold Limit Value for asbestos, and no cases of asbestosis are known to have occurred when exposures have been maintained at or below this level, despite large-scale utilization (now approaching one million tons per year in the U.S.A.). This concentration of dust is generally not visible in the average work area unless a beam of light causing a Tyndall effect is present. Usually the dust concentration must be from 8-10 million particles per cubic foot before its presence is visible in average lighting conditions.

Several years ago, it was reported that there was an increase in the incidence of cancerous tumors, especially of the lung, associated with asbestosis. Recently there have been reports of some cancers occurring in individuals exposed to asbestos dust, but who have not developed clinical asbestosis. It is believed by most authorities that these cases have been associated with exposures significantly exceeding the Threshold Limit Value. A major manufacturer of asbestos products who also mines asbestos has not been able to show an increase in cancerous growths in men working where dust concentrations were maintained at the Threshold Limit Value.

Control of asbestos dust exposure is therefore necessary. The control methods are the standard ones applicable to a variety of dusty operations. They include closed flow systems, wet processes where possible, and adequate exhaust ventilation where openings in the system are necessary. Pelletizing is sometimes used to improve the handling characteristics of otherwise dusty materials. Where satisfactory containment to stay within the Threshold Limit Value is impractical or impossible, efficient and reliable respirators are available for the protection of the employee. A program of environmental monitoring is highly desirable to determine that Threshold Limit Values are not being exceeded. In paper manufacturing, it would be desirable to know the dust concentrations where the asbestos is dumped from bags into the pulp slurry. Concentrations should also be determined where dusting occurs in

finishing products. While initial dust determinations should be made at frequent intervals, once the level has been established as satisfactory, the frequency may be extended to occasional tests to assure continuation of a satisfactory condition.

Pre-employment and periodic physical examinations of workers are desirable. These should include chest X-rays to insure that the worker has no chest condition prior to work with asbestos and to determine that no lung changes are resulting from work with asbestos.

It is believed that the addition of asbestos at the proposed levels during the manufacture of paper products would be harmless to the consumer. Total dusting would have to be well in excess of any levels acceptable to the consumer for the asbestos concentration to approach the Threshold Limit Value.

In conclusion, while asbestos dust in excess of the Threshold Limit Value is potentially harmful, as are many other dusts encountered in industry, it is as readily controlled as other such dusts and it can be used safely with appropriate precautions.

Carl U. Dernehl, M.D.
Director of Toxicology

K. S. Lane, M.D.
Assistant Director of Toxicology