PLAINTIFF'S EXHIBIT

Union Carbide 100

MEMORANDUM

TO: Messrs. T. Dougherty
R. A. Miller
R. W. Stobaeus
B. K. Barton
J. E. Skvarla
N. J. Setter
R. T. Larkin

CC: L. S. O'Rourke
T. J. Hall
H. F. Reichard/R. G. Woolery
J. A. Riddle
J. Derbecker
P. R. Chestor.
T. F. Frangos

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DATE: September 9, 1966

SUBJECT: Asbestos - Toxicology

RECEIVED
SEP 12 1966
U.C.C. - CHEMICALS & METALS DIV. CALIF.

Gentlemen:

Attached are "tear sheets" from some of the most recent publicity in respect to the subject. The one article appeared in the September 10 issue of CHEMICAL WEEK; the other was passed along to us by Peter Cheston, and appeared in the LONDON SUNDAY TIMES of August 14.

There is no doubt this kind of publicity will persist, and it is important that its inapplicability to our products and our applications not be missed by our customers and prospects. You have some positive positions you can and should take with your customers:

1. It is important that you continue to use Dr. Dernehl's "Asbestos Toxicology Report" as well as the statements made by the Food and Drug Administration (Department of Health, Education and Welfare). I am attaching copies of each; if your file supply of these is depleted, you can either run off copies or get additional from us.

2. In the CHEMICAL WEEK article, if we look at the summary of "sources of airborne asbestos", we see that, to our knowledge, our products now are used only in modest amounts in ceiling and floor tiles, and here in relatively low concentrations. Further, these are applications employing particularly good resin <u>binders</u>, making the loss of asbestos to the air from such compositions appear highly unlikely.

3. You will recall (my memo March 26) that there has been medical literature reference to the association between cancer and polycyclic aromatic organic compounds found with certain sources of asbestos -- among them jute oils from sacking materials, and 3,4 benzo(a) pyrene.

Union Carbide uses no jute bags.

Analytical tests have established the absence of organic material with Union Carbide asbestos. Some time next week, we expect microanalyses to show specifically no detection of polycyclic aromatic compounds with Union Carbide asbestos of our different grades.

4. Please note the primary concern in these publications deals with "airborne asbestos" - and Dr. Dernehl has stated clearly that "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 dusts and it can be used safely with appropriate precautions". We should take the positive position, important to our customers, that Union Carbide produces and supplies this commodity in pelletized form, a major step in assisting the user to control his own dust hazards. We feel certain this - factor has been a prominent one in the decision of certain of our floor tile customers to shift toward use of Union Carbide product.

Very truly yours,

A.E.Pufahl:dk

attach.

Taking Giant Steps

Two chemical process companies took giant steps toward diversifying into the oceanography field last week, and two paper companies with combined sales of nearly $1 billion/year reached a tentative agreement to merge.

(1) Bendix Corp. (Detroit) expanded its oceanic activities by acquiring for an undisclosed amount of stock Marine Advisers (La Jolla, Calif.), producer of oceanographic instruments for petroleum and utility companies, state and federal agencies, and firms engaged in scientific programs.

(2) Fluor Corp. (Los Angeles) and B. L. McFarland and Associates (Fort Worth and Midland, Tex.), a group of five companies involved in offshore and onshore drilling operations, have agreed to merge, subject to stockholders' approval. The McFarland group operates five offshore drilling rigs in the Gulf of Mexico.

(3) A tentative agreement to merge has been reached by U.S. Plywood Corp. (New York) and Champion Papers, Inc. (Hamilton, O.). It is subject to both directors' and stockholders' approval. The corporate identities of both companies will be preserved.

Reducing Gas Rates

The Federal Power Commission has ordered El Paso Natural Gas Co. and Transwestern Pipeline Co. to reduce by $17 million/year the price of natural gas in the southern California market.

The rate cut stems from the July 26 decision in which FPC turned down the application of Gulf Pacific Pipeline Co. (a Tenneco subsidiary) to supply gas to the Los Angeles area (*CW, Aug. 6, p. 20*). Gulf Pacific last week filed for a rehearing.

El Paso and Transwestern were told they would have to lower their rates to reflect the lower costs resulting from the bigger deliveries possible in the expanded system. At the same time, FPC said it would conduct further proceedings to decide if customers should get additional benefits resulting from more liberal depreciation allowances.

FPC has given the companies 45 days to show cause why the reduction should not take place.

Sources of airborne asbestos

- Asbestos-lined ducts used in centrally air-conditioned buildings.
- Asbestos ducts and insulation in home central-heating plants.
- Motor vehicle brake linings and clutch plates.
- Auto undercoatings.
- Asbestos ceiling and floor tiles.
- Asbestos shingles and sidings.
- Construction and demolition
  - Fitting, cutting, and removing asbestos-filled wallboards and floorings, piping and insulation.
- Incineration of asbestos-filled scrap.
- Improperly filtered effluent from asbestos processing plants.

Asbestos: Awaiting 'Trial'

The asbestos industry—whose end products are valued at more than $500 million/year—may be in for a shake-up. It could come in the form of federal legislation limiting the use of asbestos, because asbestos has been accused—though not yet "convicted"—as a significant health hazard. Probable contender for asbestos markets: plastics.

Recent studies have convinced U.S. Public Health Service specialists and other medical authorities that about 40% of all Americans have mild, chronic cases of asbestosis, even though most of them never worked directly with asbestos.

Unlike other airborne dust particles, asbestos fibers have the ability—almost as much as activated carbon—to absorb polycyclic hydrocarbons and arsenicals. Furthermore, says USPHS, in the past 30 years the asbestos-related cancer rate has increased sixfold.

The Inferences: While the average asbestos worker is well protected, the man on the street is not. The 3x1-micron asbestos fibers in his lungs can come from a variety of sources (*table, above*).

And medical experts say there's no way to assess hydrocarbon content in those lung deposits.

American Cancer Society researchers feel certain there is a synergistic relationship among airborne asbestos, smoking and lung cancer. They reason that the nondegradable, hydrocarbon-soaked fibers may well be a constant source of lung irritation.

PHS officials think it may take them up to five years to establish asbestos' true role as an air pollutant. However, Congress may act before the research is finished. Says Representative Robert Watkins (R., Pa.): "We've seen enough evidence already. Asbestos will never get a clean bill of health. With just a little more data we'll move for controls and strict ones."

Some form of asbestos control is in the offing, public health officials are certain, if only part of a larger clean-ambient-air program. However, there is the danger that Congress may enact rigorous controls on the quantity of asbestos that could be used.

In that case both Canada and U.S. asbestos products manufacturers would be hard hit. Of the five forms of asbestos mined today, chrysotile asbestos holds the predominant market position because of its insulating and processing qualities. Canada produces more than 80% of the chrysotile asbestos used in the U.S. In both countries, a number of serious dislocations would occur.

At present, there is no known material that could fill all of asbestos' strategic roles. On the other hand, should federal controls merely call for higher standards for binders and shieldings, that would spark a rise of new products, with plastics taking the lead.

Reason, say industry spokesmen, present polymer technology could easily turn up products to replace asbestos in most end-uses.

Union Carbide trial exhibit Union Carbide 100: A. E. Pufahl to Sales Distribution on Asbestos Toxicology Publicity, w... Published by AsbestosClaims.Law
ACL Doc 19963 · Page 3 of 9 asbestosclaims.law/library/19963/3

SUNDAY TIMES
LONDON

Asbestos recognised as cancer risk

By Dr Alfred Byrne

REGULATIONS which acknowledge that occupational exposure to asbestos is causing the most important industrial cancer of our time will be introduced next week by Miss Margaret Herbison, Minister of Social Security.

From August 22 the tumour known as mesothelioma will be scheduled as a "prescribed disease," so that asbestos workers who contract it as a result of their occupation after a certain date will be eligible for industrial benefit. Mesothelioma is an unusual tumour of the pleura—covering the lung—and of similar tissue lining the abdominal cavity, and is invariably fatal. Several steps are being taken towards discovering the full effects of this recently-recognised disease so that measures to prevent it can be devised.

A register of all past and present cases occurring in Britain has been set up by the Medical Research Council's Pneumoconiosis Research Unit, directed by Dr. J. C. Gilson, in Cardiff. They have added 70 new cases to their original nucleus of 120 since the Sunday Times broke the news of this epidemic on October 21, 1965. One hospital in London and another in Belfast are each admitting an average of one new case a month.

An average of 40 years usually elapses between exposure to asbestos and the appearance of the growth. Exposure for only two or three months may cause the cancer. Living near an asbestos works predisposes to mesothelioma, and relatives of asbestos workers can also get it through inhaling asbestos fibres given off the clothing of their menfolk.

Such patients were not working with asbestos, so they will not be eligible for compensation under the Industrial Injuries Act of 1947. Incredibly, perhaps, there are also other mesothelioma victims who are not eligible under the new regulation because they worked for a short time in the industry only before the new Act came into force.

There are three types of asbestos used commercially—chrysotile, crocidolite and amosite—whose possible hazards are now being assessed in the laboratory and the field. With [illegible] as chairman, the International Union Against Cancer is arranging mesothelioma surveys in areas where only one type of fibre is produced. Studies in South Africa have already shown that the disease is more common in the neighbourhood of mines producing crocidolite than amosite. To complete the picture the committee are anxious to see a similar study performed in Canada in relation to mines producing chrysotile.

Pathologists in British hospitals are also going back through their records to see if mesothelioma is a "new" disease associated with the commercial use of asbestos, and checking if it is peculiarly related to certain districts. They are also studying the incidence of asbestos particles in lungs examined post mortem. In cities of the U.S., South Africa and Britain the lungs of middle-aged and older people have been found to contain asbestos bodies in from 5 to 50 per cent. of cases. But the medical significance of this, if any, remains to be decided.

Advised by a committee of experts, the Ministry of Labour is drawing up a new code of regulations designed to give persons working with asbestos more protection than they have had from the general factory regulations. Asbestos is now used to make gutters, roofing, tiles, brake-linings and numerous other things not envisaged when the risk of asbestosis was first realised.

The official proposals will therefore include several occupations to which not enough thought is given at present. Permissible standards of dustiness will presumably be proposed for workers exposed to special risk, such as those in the textile industry and [illegible] It is hoped that the first official proposals will be made known by the end of this [illegible]

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

Our Law Department advises us that the attached exchange of letters with the Food and Drug Administration means that FDA is in agreement with us that the use of asbestos fiber as a component of paper and paperboard used in contact with food is safe and is in compliance with the Food and Drug Act and that no specific regulation under the Food Additives Amendment is necessary. Our letter to FDA is dated October 31, 1963. Their reply is dated December 6, 1963. The correspondence is between Mr. Scriba of our Law Department and Mr. Cassidy of F.D.A.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
FOOD AND DRUG ADMINISTRATION
WASHINGTON 25, D.C. 20204

December 6, 1963

Mr. George T. Scriba
Union Carbide Corporation
270 Park Avenue
New York, New York 10017

Dear Mr. Scriba:

Reference is made to your letter of October 31, 1963, relative to the status of an asbestos fiber as a component of paper and paperboard.

We concur that when used consistent with the principles of good manufacturing practice asbestos as an inert filler in paper and paperboard does not have food additive status. Therefore, there is no necessity for a regulation to prescribe the use of such asbestos fiber as an inert filler in such paper and paperboard.

Sincerely yours,

Frederick A. Cassidy

Frederick A. Cassidy
Food and Drug Officer

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

LAW DEPARTMENT

October 31, 1963

Food and Drug Administration
Washington 25, D.C.

Re: Asbestos Fiber

Gentlemen:

(1) This is to inquire whether you are in agreement with us that the use of asbestos fiber as an integral component of paper and paperboard does not result, and may not reasonably be expected to result, directly or indirectly, in its becoming a component or otherwise affecting the characteristics of the food when the paper or paperboard is employed in contact with food.

(2) If not, whether you are in agreement with us that this use of asbestos fiber is generally recognized as safe among experts qualified by scientific training and experience to evaluate its safety.

(3) If not, we ask you to file this letter as a petition for a regulation under Section 409 of the Federal Food, Drug and Cosmetic Act stating that this use of asbestos fiber is safe. We propose to sell asbestos fiber for this use. Responsible paper manufacturers tell us that it improves the quality of paper and paperboard for certain food contact use. We base this petition on the generally known physical characteristics of asbestos fiber. While we write in terms of "asbestos fiber" without limitation in view of your presumed interest in a broad regulation, our company's direct present interest lies in chrysotile asbestos (a magnesium silicate). We attach a table entitled "Solubility and Dissociation Data for Chrysotile in Water" from The Journal of Physical Chemistry, Vol. LX (1956) page 1220, and our summary of "Properties of Chrysotile Asbestos Fiber". We respectfully propose the following regulation:

¶121.__ Asbestos Fiber.
Asbestos fiber may be safely used as a component of paper and paperboard intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food.

Very truly yours,
UNION CARBIDE CORPORATION

By_____
George T. Scriba

GTS:R
enc.