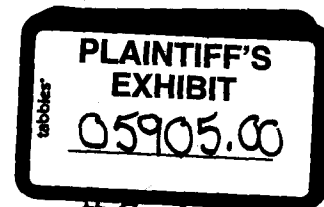


MINUTES
of the
HEALTH AND SAFETY COMMITTEE
NATIONAL INSULATION MANUFACTURERS ASSOCIATION
New York, N. Y. May 10, 1966



#4-682

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The meeting was called to order at 10:00 A. M. with the following in attendance:

R. Cotts
W. Van Derbeck
J. Destafano
F. Edwards
H. Johnston
R. Kahn
C. Sheckler
J. M. Barnhart

Gustin-Bacon Mfg. Company
Johns-Manville Sales Corp.
Pittsburgh Plate Glass Company
Owens-Corning Fiberglas Corp.
The Ruberoid Company
Baldwin-Ehret-Hill, Inc.
Johns-Manville Sales Corp.
NIMA

C. Sheckler was elected acting Chairman of the Committee.

The Chairman was asked to be present at the Executive Committee Meeting on May 24, 1966.

Following background discussion relating to adverse publicity, etc., pertaining to asbestos and mineral fiber, the Committee agreed that the projects should be separated with respect to (a) asbestos and (b) mineral fiber.

(a) The program pertaining to asbestos should be left with the Industrial Hygiene Foundation. This organization has sent a proposal to various companies for consideration, as per attachment. Other companies (than those listed in the April 15, 1966, letter) have since been asked to participate. A three year project is estimated to cost \$175,000.

(b) It was agreed that an independent agency be contracted with to study erosion with respect to mineral fiber duct liners and fibrous glass air ducts. It is estimated that the cost of this program would approximate \$25,000.



3. It was reported that the NIMA lease expires on April 31, 1964. It was agreed that the lease should be renewed for 3 years, providing any increase in rent that may be asked by the landlord will not exceed 10 percent. Mr. J. M. Barnhart will discuss the new lease with Mr. M. W. Burleson before signing.
4. It was agreed that the NIMA Annual Meeting would be held at the Seaview Country Club, Absecon, N. J., on October 5 and 6, 1964.
5. It was reported that Johns-Manville Sales Corp., was printing on cartons, crates, etc., containing asbestos products (calcium silicate, magnesia, asbestos cements) a note pertaining to the dust created by these materials. The wording will be as follows:

" Caution: This product contains asbestos fiber..

Inhalation of asbestos in excessive quantities over long periods of time may be harmful.

If dust is created when this product is handled, avoid breathing the dust.

If adequate ventilation control is not possible wear respirators approved by the U. S. Bureau of Mines for pneumoconiosis producing dust. "

ADJOURNMENT

There being no further business

The meeting was adjourned.

Respectfully submitted

J. M. Barnhart
J. M. Barnhart

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

MELLON INSTITUTE, 4400 FIFTH AVENUE

PITTSBURGH, PA. 15213

April 15, 1966

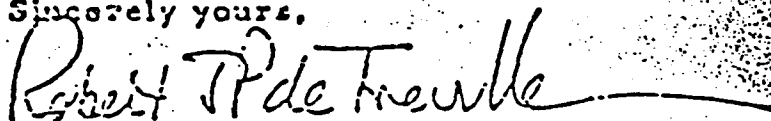
TO: Mr. Leon Horowitz
Mr. C. L. Ebecklar
Mr. F. H. Edwards
~~Mr. Lee H. Grand~~
Dr. J. H. Wolfe

Certain-teed Products Corporation
Johns-Manville Corporation
Owens-Corning Fiberglass Corporation
Pittsburgh Plate Glass Company
U. S. Rubber Company

Attached is an Industrial Hygiene Foundation asbestos and fibre-glass three-year research project proposal incorporating suggestions made by those listed above who attended a research planning meeting in my office on April 12, 1966.

Also enclosed is a contractual agreement in an original and one copy; in the event that sponsorship of this project is approved, both should be signed, the carbon returned and the original retained for the sponsor's files.

Sincerely yours,



Robert T. P. deTreville, M.D.
Managing Director

deT:cjc

Enclosures

cc: Mr. Marshall Burch, Owens-Corning Fiberglass Corporation
Dr. G. S. Bishop, Owens-Corning Fiberglass Corporation

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

WELLES INSTITUTE, 4500 FIFTH AVENUE

PITTSBURGH, PA. 15213

APRIL 13, 1966

Prospectus for

An Investigation of:

- a. The Specificity of Asbestos Bodies and
- b. The Biologic Effects of Trace Substances Associated with Chrysotile Asbestos.

INTRODUCTION

Thompson⁽¹⁾ found that about 30% of the people that had died in hospitals in Cleveland (500 consecutive autopsies) had "asbestos bodies" in the lungs. The same author⁽²⁾ found a similar prevalence of "asbestos bodies" among the hospital deaths in Miami, Florida. Cawna, Totten and Green⁽³⁾ examined the lungs of 100 non-selected hospital deaths for which autopsy permission had been obtained, and found that 40% of these had "asbestos bodies" in their lungs. Lea Webster⁽⁴⁾ recently reported a 47% prevalence in Veterans Hospital.

There is, at present, a reasonable doubt that "asbestos bodies" are specific indicators of the inhalation of asbestos fibers. Such bodies have been found in coal miners and ship workers where they have been called "pseudo-asbestos bodies." Recently Davis⁽⁵⁾ and Collins⁽⁶⁾ have demonstrated the intracellular development of "asbestos bodies" secondary to amorphous

Asbestos occupies an anomalous position in its ability to produce lung damage, causing diffuse fibrosis as well as the production of lung cancer. It is anomalous inasmuch as no other silicate has been shown to possess this ability. The fibrosis encountered in silicosis is limited to the tremolite variety, which is asbestos-like. On the other hand, the pneumoconiosis associated with the mining of mica (another silicate) has not been investigated experimentally, and the fibrogenic activity of the dusts associated with the mica has not been evaluated. Other silicates may evoke either minimal or relatively slight inflammatory changes, and certainly are incapable of producing lung cancer.

Inasmuch as certain polycyclic hydrocarbons and trace metals known to be potent cancer-producing agents have been demonstrated in asbestos, particularly nickel and benzo(a)pyrene, the possibility exists that the trace metal and/or the polycyclic hydrocarbon may be solely responsible for the observed pathogenicity.

This possibility is supported by the findings:

1. The report of Brown and Tannen⁽⁷⁾ which indicated that the prevalence of lung cancer among Canadian asbestos miners was no greater than that of the general population. This was in contrast to the report of Doll⁽⁸⁾ which indicated a greatly increased risk of lung cancer among British workers exposed to asbestos dust while intercalating the asbestos.

2. In a recent investigation in the laboratory of the Industrial Hygiene Foundation, lung cancers were found in rats exposed for 18 months to high concentrations of chrysotile dust.⁽⁹⁾ Because rats exposed to chrysotile dust by other investigators failed to develop lung cancer, there is a good probability

that the chrysotile dust that produced lung cancer was significantly different from that which did not have this effect. It is likely that this difference is caused by a coating of nickel steel alloy applied to the asbestos dust particles during the continuous hammer milling process used for rendering the dust respirable. This method has not been used by previous investigators. Nickel has been found capable of producing lung cancer in trace amounts.

Although asbestos and glass are both silicates, the industrial health experience with workers of these two materials has been vastly different. No pulmonary disease has been reported in workers exposed to glass dust.

Nevertheless, the dust of filamentous glass has been labeled as highly dangerous in the lay press by association with asbestos. It is a fact that although the effect of flake glass dust on the lungs of animals has been reported, no similar study has been made of the dust of filamentous glass without an associated resin or oil.

PROPOSAL

Phase 1.

It is proposed to examine the response of animals lungs to different inorganic fibrous materials of contrasting chemical composition, and to characterize the differences and similarities in the response.

Phase 2.

It is proposed to investigate the influence of trace minerals and polycyclic hydrocarbons (i. e., benzo(a)pyrene) associated with asbestos ore or subsequent processing on the long-term response of the lung to the dust.

Another objective of this phase is to obtain definitive data on the long-term effect of dust derived from filamentous glass upon the lungs. Three varieties of such glass dust will be investigated:

1. with the phenol-formaldehyde-type of binder
2. with the binder used in textiles
3. without binder.

MATERIALS AND METHOD

Phase 1.

The following fibrous materials will be reduced to respirable particle size ($<3\mu$) and will be injected in amounts of 3.5 mg. to 30 mg. as aqueous suspensions:

1. chrysotile dust (prepared by milling in Wright mill and with demonstrated carcinogenic potential)
2. chrysotile dust (unmilled synthetic)*
3. aluminum nitride
4. tricalcium phosphate (filamentous)
5. fibrous glass
 - a. with phenol-formaldehyde-type binder
 - b. with binder used for textiles
 - c. without binder
6. magnesium hydrous (brucite)
7. mineral wool
8. zinc oxide (filamentous)

These materials will be injected intracavally into canines under ether anesthesia. Previous experience has demonstrated that asbestos bodies will form in response to chrysotile dust within five months. The animals will therefore be held for six months and then killed.

The lungs will be expanded with buffered formalin under a head of

Q 3 cm. of water. Blocks removed from these lungs will be sectioned at 6

* Synthetic chrysotile has been prepared at Mellon Institute by Dr. William Graessley. Electron photomicrographs show the characteristic

after paraffin impregnation. These sections will be stained by different methods and photographed sequentially to provide means for studying more completely the tissue reaction to these various materials. Search for the so-called asbestos bodies will be made using routinely stained sections, and sections stained for iron. In addition, unstained cleared sections will be examined under certain conditions for asbestos bodies. The latter group will be examined in this manner.

The difference in tissue reaction between the synthetic chrysotile dust and that which is known to be fibrogenic as well as carcinogenic will point to the contribution to pathogenicity made by one or more of the various trace substances which may be associated with chrysotile asbestos dust as a result of processing.

The development of "asbestos bodies", better termed ferritin bodies (ferritin) or forms other than asbestos would point to the non-specificity of these structures and to the desirability of collecting such "asbestos bodies" from human lungs in order to subject them to electron-probe analysis. Such analysis could give information in regard to the chemical make-up of the dust responsible for the development of the ferritin ("asbestos") body.

Phase 3.

In order to explore the etiologic role of the various components of chrysotile asbestos in the production of lung fibrosis and lung cancer, six series of rats will be injected intratracheally with the following:

1. chrysotile dust known to be carcinogenic
2. synthetic chrysotile

3. synthetic chrysotile plus nickel
4. synthetic chrysotile plus nickel, plus benzopyrene
5. nickel alone or with carbon as carrier
6. benzopyrene with carbon as carrier.

These rats will be held for two years and then killed. The lungs will be prepared for examination and sections cut in the same manner as in Phase 1.

Three other series of rats will be injected intratracheally with the following dusts:

1. filamentous glass with phenol-formaldehyde-type binder
2. filamentous glass with the binder used for textiles
3. filamentous glass without binder.

These animals will also be held for two years and then killed. The lungs will be prepared and studied as in the preceding groups.

The number of animals per series will be such that there will be no doubt regarding the statistical significance of the results.

PROGRESS REPORTS

A progress report giving the results of Phase 1 will be submitted at the end of 12 months.

An interim report on Phase 2 will be submitted at the end of 24 months, and a final report will be submitted at the end of the third year.

COST

The cost of this investigation is \$10,000 per year for three years, or \$30,000 for each of the five participating companies.

SUPERVISION

Research will be performed under the direct supervision of Dr. Paul Gross, Director of the Foundation's Research Laboratory.

The Foundation's studies on asbestos presently are being conducted under partial support of the U. S. Government through a National Institutes of Health grant and a contract with the U. S. Public Health Service, Division of Occupational Health (Dr. Lewis J. Cralley).

A list of Dr. Gross' publications in the pathology of pulmonary diseases, and a membership information booklet describing laboratory projects presently in progress, are attached.

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