

Report of

Meeting - May 6, 1969
PVC Resin Producers Representatives
University of Michigan Epidemiologic Study
Washington, D. C.

This meeting under the auspices of the Association's Occupational Health Committee was held at the University Club. A list of representatives from sponsoring companies and the University of Michigan Institute of Industrial Health is attached.

Committee Chairman, Dr. C. U. Dernehl opened the meeting with a brief outline of the project program to date, the general objectives, a short discussion of the complexity of the problem, and interpretation of the findings. He then presented recommendations of the Occupation Health Committee (OHC) which had considered the report in a meeting April 30.

The Committee recommended the following changes in the "recommendations" which appear on page 104 of the report supplied to all producer representatives:

(a) RECOMMENDATION 1

Eliminate the last sentence "Where it is necessary for workers to enter the reactor tanks, sufficient ventilation should be provided to reduce the vinyl chloride concentration below 50 ppm." Insert in its place "Where it is necessary for workers to enter the reactor tanks adequate ventilation should be provided. Inasmuch as the etiologic agent of the disease is unknown, a level of vinyl chloride below 50 ppm should be used as an index of adequate ventilation."

(b) RECOMMENDATION 3

Change word "continued" to "supported"

The OHC also resolved to make additional recommendations to the vinyl chloride and PVC manufacturers:

- (a) There should be pre-assignment examinations of vinyl chloride and polyvinyl chloride production workers. These examinations should include:
 - I. Hand X-ray
 - II. History - including that of Raynaud's disease, scleroderma and abnormal cold response.
- (b) There should be periodic surveillance examinations. These examinations should be given at least once a year and should include:
 - I. Hand X-ray
 - II. History - as above

The committee recommended that manufacturers of PVC should sponsor further studies of the disease and its causes and that such studies be under the supervision of the OHC.

It was further recommended that the committee chairman write to Dr. Magnuson at the University of Michigan and congratulate him on the successful conclusion of the project and on the excellence of the report.

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Drs. Magnuson and Dinman and Professor Cook of the Institute then reported at length on this study. They included a review and explanation of many of the charts contained in the report as distributed. Errors noted in several of the charts and figures were listed and it was subsequently agreed that an errata sheet taking care of all of these changes would be forwarded to all recipients of the original draft.

The afternoon meeting was devoted to open discussions of the findings by the Institute and the recommendations of both the Institute staff and the OHC. Some pertinent points brought out in the discussion were:

- 1. On the matter of hand cleaning in the recommendations, the Committee considered this point and had the general understanding that it was the intent to get away from hand cleaning of reactors.

2. On questions regarding catalysts by groups vs. cases, Prof. Cook reported that they did not find any combination of materials causing difficulty.
3. There was a further discussion of the threshold limits and the recommendations regarding monomer limits, particularly in connection with monomer plants. Here it was made clear that there is a condition of acroosteolysis (AOL) related to poly manufacture of PVC which the evidence suggests at this time. There was no evidence that this is related to monomer content that remained in the poly reaction. It is difficult to say that any one item is responsible although admittedly the monomer may be the causative agent, or this may not be so.
4. For future protection of the workers it was suggested that they be kept from coming in contact with the reactor chemicals a short time after the reaction is completed.
5. At this time there appears to be no evidence of AOL prevalent in operations subsequent to the reactor stage.
6. AOL is a destruction of tufts of the fingers. This may be a general systemic disease in some people.
7. Several pointed out that the suggested monomer level of 50 ppm recommended by the Committee may be misunderstood. This was explained by the chairman.

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A paper on this study was presented by Dr. Dinman in a medical association meeting during the latter part of April. A second paper will be presented in the coming meeting of the Industrial Hygiene Association in Colorado. Following a discussion on the publication of the report a motion was made,

that the University of Michigan be permitted to publish the scientific facts developed from this study but that the complete document now available to the OHC and the sponsoring companies not be

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released but held confidential for the sponsors only.

On being duly seconded this was passed unanimously. At this point the secretary stated that it was the general policy of the Association to make the results of such research freely available and that the details of the contract with the Institute would be followed in this respect.

The meeting was then concerned with further studies that might be desirable. Dr. Magnuson pointed out that patients having AOL may have bones other than the fingers involved and posed a number of questions regarding systemic manifestation. He stressed the need for continued and a more thorough follow up on X-rays, clinical history and the study of the cumulative action through X-rays.

He also recommended further etiology study:

- (a) To obtain a clear definition of products in the kettle including time of flight by mass spectrometer ($t_1 - t_n$). Also, on animal experiments better characterization is needed.
- (b) On this it was pointed out that current data may give additional leads.

Chairman Dernehl then proposed that the question of future work be referred back to the OHC for recommendations on what should be done. It was also suggested that the Committee issue guidelines or instructions for the taking of history, physical examinations involved and frequency of follow-up on surveillance. During this part of the discussion it was pointed out that the recommendation regarding x-rays had already been made to the companies in the questionnaire form which is included in the subject report.

F. H. Carman
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Enclosure

May 15, 1969

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Producer Representatives

Laurence H. Ballou
John T. Barr
Edwin T. Biehl

Harold E. Birr

Frank A. Cox
C. U. Dernehl, M.D.
E. M. Dixon
John E. Ertel
J. A. Fehrenbach

Albert W. Fuhrman

M. G. Glenn
N. V. Hendricks
George W. Ingle
M. N. Johnson, M.D.
Robert W. Laundrie

Sydney Lipton
William E. McCormick
John L. Nelson
Cal Rehfuss
Howard E. Runion
Harry A. Russell
Arthur C. Siegel
William J. Wetzel
R. N. Wheeler, Jr.
J. H. Wolfsie, M.D.

Firestone Tire and Rubber Co.
Airco Chemicals & Plastics
The Pantasote Co. (Mgr. Resin
Operations)

Diamond Shamrock Corporation
(Mgr. Delaware City Plant)
Goodyear Tire & Rubber Co.
Union Carbide Corporation
Celanese Corporation
The Pantasote Co. (V.P. Production)
Shawinigan Chemicals Div.
Gulf Oil Canada
Great American Plastics,
Chemical Division
General Tire & Rubber Co.
Standard Oil Company (N. J.)
Monsanto Company
Monsanto Company
General Tire & Rubber Co.
Chemical Division
Esso Research & Engineering Co.
B. F. Goodrich Company
B. F. Goodrich Chemical Company
Allied Chemical Corporation
Gulf Oil Corporation
The Pantasote Co. (Exec. V.P.)
Tenneco Plastics Division
RUCO Div., Hooker Chemical Corp.
Union Carbide Corporation
Uniroyal, Inc.

University of Michigan

Professor W. D. Cook
Bertram D. Dinman, M.D.
Harold J. Magnuson, M.D.

Manufacturing Chemists Association

George E. Best, Technical Director
F. H. Carman