

CHEMICAL MANUFACTURERS ASSOCIATION

Record of Meeting

of the

Vinyl Chloride Research Coordinators

DATE: September 17, 1980

PLACE: Dow Chemical U.S.A.
Washington, D.C.

TIME: 9:00 A.M.

ATTENDANCE

MEMBERS PRESENT

T. R. Torkelson, Chairman
Z. G. Bell
W. D. Harris
M. N. Johnson
D. L. Kirkland
R. N. Wheeler
W. M. Smith

Dow Chemical U.S.A.
PPG Industries, Inc.
Uniroyal, Inc.
The BFGoodrich Company
Shell Oil Company
Union Carbide Corporation
Air Products & Chemicals, Inc.

C. R. Stack

CMA Staff

MEMBER ABSENT

T. J. Benya

Ethyl Corporation

The meeting was called to order by the Chairman, Dr. Ted Torkelson, at 9:10 A.M.

1.0 Epidemiology Study Proposal:

The group considered a July 1980 Environmental Health Associates, Inc proposal that outlined the tasks required to perform an update of an epidemiological study of vinyl chloride workers done by Gubershaw Cooper Associates/Equitable Environmental Health, Inc. from 1973 through 1976 and presented in a final report published in January 1978. The TCA/EHA Study was an historical prospective mortality study that followed a cohort of 10,173 male employees whose jobs had exposed them to vinyl chloride for at least one cumulative year prior to December 31, 1972. The cohort was drawn from 37 individual plants operated by 17 different companies.

Probable exposures to VCM were graded by company personnel on a scale of high, medium and low. Cumulative exposure for each cohort member was established by multiplying the number of months in an exposed job by an exposure grade using a scale of one to three to equate low to high exposure. The original investigators acknowledged that this approach failed to assure uniformity from plant to plant and that accurate determination of exposure levels experienced by workers in the 1940s, 50s and 60s was practically impossible.

For the purpose of this follow-up study, EHA proposed that exposure determinations be made solely on the basis of duration from the time exposure began through December 31, 1972. The group was in agreement on the first point (basis of exposure determination) but felt that exposure to VCM in the period 1972 through December 1979 should also be considered. This would mean that individual work histories for the seven year period would have to be updated.

This option was discussed at the EHA/CMA meeting in Berkeley on June 25-26, 1980 and at that time EHA considered that, if it was the desire of the group to proceed with updating work histories, it would not add considerably to EHA's cost to perform the study; the burden of providing resources to perform this task would lie primarily with the plants. The group - UNANIMOUSLY VOTED to make this recommendation for follow-up to EHA and the Project Panel.

There followed a general discussion on the merits of proceeding with an update of the original TCA/EHA study. It was noted that seventeen cases of angiosarcoma have been reported in the United States since 1972. Even though the relationship between exposure to VCM and the development of liver angiosarcoma is fairly well established, it would be of interest to see what has developed in this cohort over the last seven years. More importantly, the group would like to see what trends have developed with respect to other cancers (brain, lung, leukemia) quoted in excess in the 1978 report. A letter to Dr. Stack from Mr. Richard Davis of EHA, dated August 26, 1980, was distributed, in which Mr. Davis estimated that an additional 350-400 deaths would be generated in the follow-up. The addition of 350 deaths would provide sufficiently large numbers to provide statistical significance in those categories with excessive Standard Mortality Ratios (SMRs) in the 1978 report.

There was a relationship between exposure to PVC dust and the complaint of breathlessness when hurrying on level ground or walking up a slight hill, but this relationship was found only in cigarette smokers and not in non-or-ex smokers.

4.1 Chest Radiographs

The chest radiographs were read independently by recognized experts using the ILO U/C International Classification of Radiographs of Pneumoconiosis (International Labor Office, 1972). The medically qualified readers were chosen to represent a range of interpretations of the presence of small radiographic opacities and on the basis of systematic inter-reader differences recorded in previous work. None of the radiographic experts were employed by IOM.

One of the three experts detected small, round opacities more commonly in the radiographs of men with higher exposure to PVC dust than in those with lower or no exposure. The other two readers did not detect an effect of PVC dust although they observed small, round opacities in a few cases. The opacities seen by these readers were not more common in those with higher exposures to dust than in those with lower or no exposure. Prevalence of small, round opacities was not related to the presence of chronic cough or sputum, or histories of chest illness.

The IOM report concludes with the opinion that the effect of PVC dust inhalation on lung function is of the same order of magnitude as that of cigarettes and approximately one-seventh that of aging. They also conclude that while these results are not unduly alarming, they do indicate that further measures to reduce individual dust exposure would be prudent.

4.2 Recommendations of the Research Coordinators

4.2.1 The Research Coordinators recommended that ICI send a copy of the IOM report to NIOSH. This recommendation was contingent on subsequent advice given to the ICI representatives by their legal counsel in Wilmington.

4.2.2 The Chairman of the Research Coordinators, Dr. T. R. Torkelson appointed Mr. R. N. Wheeler to prepare a summary statement containing salient findings presented in the IOM report. On completing his statement, Mr. Wheeler is to forward it to SPI and to the Project Administrator. Upon receiving it, the Project Administrator is to send

- it immediately to CMA's General Counsel who, in turn, is to collaborate with SPI's Counsel, Mr. Joseph Hadley, on the preparation of the final statement. After joint agreement of SPI and CMA counsels, the document will be sent to the Research Coordinators to secure their approval of technical content. After the Research Coordinators have approved the document in final form, it will be distributed to all Panel members

5.0 Extension of Basic Epidemiological Study, Five-Year Update

Dr. Torkleson presented a status report on preparatory work in progress. His review included the document recently prepared by the Project Administrator entitled "Specifications on which Proposals and/or Bids are to be Based for a Five-Year Epidemiological Update on Vinyl Chloride and Critique on Factors Relevant to the Study". These bid/proposal specifications emphasize that an evaluation of data currently being archived by Equitable Environmental Health, Inc. (EEH) is a necessary prerequisite to both the "brain study", should it be conducted as a separate entity, and to the larger investigation, the five-year epidemiological update.

The cohort data used in the basic epidemiological investigation of VC workers is stored at the Rockville, Maryland offices of EEH. These consist of unit files and computer cards for each cohort member, a series of computer print-outs on study analyses, and pertinent correspondence with participating plants.

The unit files contain the raw data collected from plant records with the data reduced to the study format. The computer cards are punched with the data so reduced. The computer print-outs contain the data from which the comparative tables were prepared for the reports. Review of these data in detail is necessary to the development of a definitive study protocol, a responsibly valid cost, and a performance time estimate.

The ~~epidemiological~~ ^{basic} epidemiological update is to extend from December 31, 1972 to December 31, 1977.

- 1) An effort will be made to determine the vital status as of December 31, 1977 of the eight thousand nine hundred and seventy cohort members who were determined to be alive on December 31, 1972.
- 2) An attempt will be made to determine the vital status of the four hundred and ninety-six cohort members who were lost to follow-up during the previous study.

- 3) Efforts will be made to retrieve death certificates for cohort members identified as deceased based on the follow-up effort.
- 4) The complete study population will be analyzed using the expanded life table program, for example, Monsons's program (Harvard) or Enterline's Program (University of Pittsburgh).

After deliberating on factors relevant to the brain study and to the overall epidemiological update it was VOTED:

To request commitment of \$30,000 to cover:

- 1) A study or assessment of the data currently in storage at EEH,
- 2) A case control study of brain tumors, and
- 3) The preparation of a protocol for the five-year epidemiological update.

6.0 The Vinotex Study

Dr. William Adams reported very briefly on a study conducted within the Vinotex Group in England. This research is an attempt to corrolate dose-related VC exposure and coronary disease. Amongst other phases, are subsidiary investigations on triglycerides. Following Dr. Adams' review, Dr. M.N. Johnson will follow-up with Dr. Tamburro (Director of Research at the University of Louisville) on observations made by Dr. Tamburro and his associates on triglycerides and their possible relationship with VC exposures and coronary incidences.

7.0 Evaluation by Dr. J. M. Norris of the Edgewood Arsenal Study on Vinyl Chloride Monomer

At the request of the Panel Chairman, Dr. T. R. Torkelson, Dr. J. M. Norris evaluated the final report issued on the so-called Edgewood Arsenal "Single-Hit Study" sponsored by the Consumer Product Safety Commission (CPSC) under an inter-agency agreement with the Chemical Systems Laboratory (formerly Edgewood Arsenal).

Dr. Norris reported that the final Edgewood report contains the same deficiencies as did the draft report. Specifically, the report contains discrepancies both in the reporting of the number of animals per test group, that were placed on the various studies, relative to the numbers that were evaluated. Further discrepancies were found in the numbers of animals observed with tumors as reported in various tables. Further, the months in which the studies were terminated were incorrectly reported.

Data in the report indicate that both the ICR and A/J mice had relatively high background incidences of pulmonary adenomas. The ICR mice also had either a chronic pneumonic condition or developed pneumonitis during the study. The marked body weight loss in the mice, both the vinyl chloride exposed and control animals, during the twenty-eighth and forty-second weeks of the studies suggest that external factors may have contributed to the pneumonic conditions. Except for the male ICR mice in the group exposed to 50,000 ppm vinyl chloride, the incidence of pneumonitis is roughly proportional to the incidence of pulmonary adenomas. However, since the handling/housing of the control mice relative to the exposed mice is not reported and since no statement is made as to whether medications were administered, the significance of the apparent association cannot be concluded.

8.0 Proposed Action Pertinent to the Edgewood/CPSC "Single-Hit Study"

Appropriate follow-up action will be taken to that outlined under Section 14.0 in the Record of Meeting, September 20, 1979.

Dr. Torkelson, Dr. Hatfield, and Mr. Wheeler will pursue additional data on the respective study categories listed under section 14.0. CMA's action will be contingent on the results of the efforts of these gentlemen.

9.0 An Update on Dr. John Stafford's Worldwide Registry of Angiosarcoma of the Liver Vinyl Chloride Polymerization Workers

Dr. Stafford presented the most recent data on his widely respected registry of angiosarcoma cases. These data are as follows:

<u>Country</u>	<u>YEARS</u>		
	<u>1977</u>	<u>1978</u>	<u>1979</u>
Canada	1	0	0
France	2	2	2
Germany	3	4*	0
Sweden	1	0	0
United Kingdom	0	0	2
United States	1	2	0

*Plus two unconfirmed

10.0 VCM/PVC Symposium

A symposium on Vinyl Chloride monomer and polyvinyl chloride is to be held in Washington, D.C. "sometime during the later part of February". It is currently anticipated (by representatives of Dr. Enfant's office) that it will be a two day

The group VOTED to accept the EHA proposal and to recommend to the vinyl chloride industry that the update be done according to the tasks outlined in the EHA proposal. The group also recommended that EHA, having done the feasibility study, should be the contractor for the study itself. The suggestion was based on EHA's acknowledged scientific reputation and experience with the data base, maintenance of continuity, and the fact that EHA's cost estimate is in line for a study of this type.

Those present worked out what was considered to be an equitable basis for cost sharing of the proposed project. The group recommended that participating companies be pro-rated according to their percentage of total VCM name plate capacity plus PVC name plate capacity and other uses for the year 1979. Those companies whose plants formed part of the original study, and have since gone out of the business (e.g. Olin, Monsanto, Allied and Exxon) would not be asked to participate in funding of the project but would be asked to contribute plant resources towards providing data on their members of the cohort. Manufacturers of VCM/PVC who have entered the market since 1972 would be asked to participate on the pro-rated basis described above.

There was also an agreement that the study should proceed if two-thirds of the vinyl chloride industry are committed to the project. In the event that there is not total involvement, those committed will necessarily have to contribute more to the study than might originally be expected. Total costs of the study, including contingency and administrative considerations, would be in the neighborhood of \$300,000.

2.0 IBT Settlement

Negotiations with IBT for a settlement on the vinyl chloride inhalation studies were initiated in July. It was expected that IBT would make CMA an offer after a board meeting to be held in August. To date no such offer has been received. In order to expedite settlement, the group VOTED to recommend to Mr. Ed Frost, CMA legal counsel, to make a best settlement by the end of this year and consider legal action next year if an equitable agreement cannot be worked out.

The next meeting is planned for November 14 (alternate date November 10th), at which time the vinyl chloride industry will be invited to participate in the proposed project. Drs. Stack and Torkelson will draft a letter inviting participation and will include the recommendations of this group in their approach to potential participants.

The meeting was adjourned at 1:00 P.M.

Carol R. Stack, Ph.D. *CRS*
Project Administrator
Vinyl Chloride Research

CRS:mrh
Record Subject to Approval
September 25, 1980

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