

X

MEMORANDUM

November 23, 1971

TO : Dr. C. U. Dernehl, NYO-4
Mr. M. E. Eisenhour, 515
Mr. R. J. Hanna, 511
Dr. E. Q. Hull, 514
Mr. G. R. Kraft, 514
Dr. K. S. Lane, NYO-4
Dr. W. R. Manning, 511
Dr. A. B. Steele, NYO-28

SUBJECT: Manufacturing Chemists Association
Occupational Health Committee -
Vinyl Chloride Conference

Companies with interest in vinyl chloride were invited to send representatives to consider the following:

1. Continuation of the Acroosteolysis Registry Program.
2. Review the reports of Dr. P. L. Viola on the development of tumors in rats exposed to vinyl chloride monomer gas.
3. Consider sponsoring a research program in the U. S. to confirm and to provide additional data in Doctor Viola's study area. The proposed program would cost approximately \$100,000 per year.

The meeting attendance was light with about 30 people present. A full list of those attending will be issued later by MCA.

Continuation of the Acroosteolysis Registry Program was estimated to cost \$300 to \$500 per month, depending on the case load. The program has cost \$4,000 for eighteen months operation to date. A firm budget for future operation was not available at this time.

UCC 084442

November 23, 1971

Essentially all those present expressed a desire to continue the program now supported by about ten companies. Individual companies will be contacted for further authorization of funds. Union Carbide should continue to participate in this program at least until the physiological effects of vinyl chloride are better defined.

Dr. P. L. Viola, et al of the Regina Elena Institute for Cancer, Research, Rome, Italy, sponsored by Solvay M. C. started out to study acroosteolysis and its attendant Raynaud's phenomena. He originally started working with monkeys and later switched to rats because of cost and other factors. Doctor Viola exposed rats to varying concentrations of acetylen derived vinyl chloride and noted the following incidence of tumors:

<u>Vinyl Chloride Concentration</u>	<u>Incidence of Tumors</u>
30,000 ppm	65%
20,000 ppm	50%
10,000 ppm	25%
5,000 ppm	10-15%
<5,000 ppm	Some tumors

(Dr. M. J. LeFevre, Solvay M. C., stated later that the incidence of tumors in control groups of this strain of rats was 5%.)

Doctor Viola's initial work involving exposure of rats to 30,000 ppm VC was reported at the Tenth International Cancer Congress, Houston, Texas in May 1970 and was later published in Cancer Research, May 1971. The remaining data is unpublished at this time. After the appearance of Doctor Viola's paper at the Houston meeting interested companies, including UCC, paid Doctor Viola's expenses for a meeting in Washington on May 5, 1971.

Publishing of Doctor Viola's work in the U. S. could lead to serious problems with regard to the vinyl chloride monomer and resin industry. These are as follows:

1. The Delaney amendment bans the use of any material in food that can cause cancer.
2. A law exists in Pennsylvania banning carcinogens from the air; i. e., the allowable threshold limit is zero.

UCC 084443

Novemb r 23, 1971

3. The present political climate in the U. S. is such that a campaign by Mr. R. Nader and others could force an industrial upheaval via new laws or strict interpretation of pollution and occupational health laws.

There has been no Government reaction to Viola's work, to date. The ACGIH plans to discuss it this week at their meeting.

Dr. T. R. Torkleson reviewed the proposed MCA-sponsored animal study. This program involved exposure of rats and mice to three levels of vinyl chloride gas concentration- 5,000, 1,500, and 500 ppm. The vinyl chloride would be derived from ethylene and from acetylene. The rat study would cover 24 months while the mouse study would cover 12 months. The cost of the study was estimated to be \$183,000 by Industrial Biotest, Chicago, Illinois.

Depending on the results of this study, an epidemiological study of the industry could be required. If vinyl chloride were exonerated in the proposed animal study, then a study of the effects of the material on progeny might be required.

The need for two sources of vinyl chloride and the chosen exposure concentrations was questioned, but no action was taken at this time.

Dr. M. J. LeFevre, Solvay M. C., discussed the work of his Company in Europe as well as his own knowledge regarding physiological effects of vinyl chloride. Items of interest are as follows:

1. Rumanian work showed 10% liver enlargement as well as acroosteolysis. Workers in Spain showed unnatural weariness, possibly indicating liver involvement. This was not noted in French or Belgian workers.
2. Doctor Viola found 29 impurities in his vinyl chloride including methyl chloride. This could be a major factor.

UCC 084444

3. The bone tumors not d by Viola were probably .
acroosteolysis. Doctor LeFevre has seen
lesions in the knees and in the pelvic area of the back.
4. No acroosteolysis has been found in monomer and
compound plant workers. No tumors in reactor
cleaners at Solvay M. C. plants.
5. Doctor LeFevre theorizes that vinyl chloride is
absorbed in body fats and is carried to the brain.
It acts on the centers controlling circulation of blood to
the extremities. Restriction of the blood flow causes the
pH of the bone structures to move from a normal basic
condition where minerals are deposited to an acidic condi-
tion causing removal of minerals from the bones. Acro-
osteolysis is caused by general exposure and inhalation of
vinyl chloride; not just exposure of the hands.
6. Doctor Viola's work is being checked and expanded.
European studies underway involve exposure of
animals to concentrations of 20,000, 10,000, 5,000, 2,000,
500, and perhaps 100 ppm. Vinyl chloride used will be a
mixture of 50% acetylene and 50% ethylene derived.

The afternoon discussion originally planned to organize industry support for the MCA program showed that many questions existed and would have to be answered before a program could be presented for industry support. Some of the principal items discussed were:

1. Acetylene-based vinyl chloride monomer could
possibly be cut from the study except to confirm
Doctor Viola's work at the 5,000 ppm exposure level.
2. Lower concentration exposure levels, such as 50
ppm, should be checked.
3. The animal study proposal was still not completely
set and it should not overlap the European study
mentioned by Doctor LeFevre.
4. Human epidemiological studies should be made.

UCC 084445