PLAINTIFF'S EXHIBIT
UC-1155

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September 16, 1977

Mr. R. A. Griffin, Area Director
Occupational Safety and Health Administration
U. S. Department of Labor
Room 2118
2320 La Branch
Houston, Texas 77004

Dear Mr. Griffin:

On September 15, 1977, Mr. Richard Miller, OSHA Industrial Hygiene Compliance Officer requested a copy of a Mortality Analysis Survey which was done on vinyl chloride exposed workers in the Texas City Plant. This material was furnished to Tabershaw-Cooper Associates to become a part of an epidemiological study for the Manufacturing Chemists Asscciation. A copy of a portion of their report is attached.

Specifically, at Texas City, there were sixteen deaths of 431 employees. A copy of the causes of death is attached.

Sincerely,

David H. Glenn

David H. Glenn, M. D.
Medical Director, Gulf Coast Area

DHG/eb
Encl.

UCTC 20849

EPIDEMIOLOGICAL STUDY OF VINYL CHLORIDE WORKERS

Final Report - May 2, 1974

I. SUMMARY

Eight thousand three hundred and eighty four men who had had at least one year of occupational exposure to vinyl chloride before December 31, 1972, were followed in a historical prospective mortality study. The major findings of the study are:

1. The overall mortality of the study population was approximately 75 percent of what would be expected in a comparable population of U. S. males.
2. No cause of death showed a statistically significant excess over what would be expected in a comparable U. S. male population.
3. No new deaths identified as angiosarcoma of the liver were found.
4. All previously known Angiosarcoma deaths in the study population during the study period were found as part of the routine study procedure.
5. Cancers of the liver (primarily angiosarcoma), respiratory system, brain, and cancers of unknown primary site, as well as lymphosarcoma, occurred more often than expected in those members of the study population with the greatest exposure. Even though the excesses were not statistically significant, the findings warrant further study.
6. Other cancers occurred at lower levels than in the general male population, with the exception of cancers of the buccal cavity and pharynx. There was an excess of these

suicide chuds.
Probable link to chewing tobacco

UCTC 20850

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cancers, which however was inversely related to exposure. The explanation for this finding is not apparent.

II. INTRODUCTION

The study was begun by Tabershaw/Cooper, Associates, Inc. on June 15, 1973, under contract from the Manufacturing Chemists Association. The original eight month period of the contract was later extended by two months, in consideration of logistical problems arising from the number of plants which participated in the study.

The objectives of the study are:

(1) To compare the mortality of individuals who have worked in vinyl chloride plants with that of the general population;

(2) To compare mortality patterns within the population of vinyl chloride workers, based upon estimated occupational exposure; and

(3) To compare mortality among vinyl chloride workers with the mortality of other groups which TCA, Inc. has studied.

The study took the form of a historical prospective mortality study. The study population consisted of individuals who had worked for at least one year in a job involving exposure to vinyl chloride before December 31, 1972, and included retired and terminated as well as active workers. For each such worker the date of birth and an employment history were obtained, and the vital status of the worker as of December 31, 1972, was ascertained. For those found to have died, those death certificates that were available were obtained and the cause of death determined. The observed mortality was compared with that of the United States male population.

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III. SELECTION OF STUDY PLANTS

The Manufacturing Chemists Association identified 43 United States plants belonging to 19 companies, which either produced vinyl chloride or used it in the production of polyvinyl chloride. The name and address of a responsible liaison person at each company and plant was provided to TCA, Inc. (Attachment A).

A brief questionnaire was sent to each plant to obtain an estimate of the exposed population and to find out how far back in time personnel records could be obtained, and to determine whether job histories were available for retired and terminated workers (Attachment B).

All the plants responded. On the basis of the replies, four plants were dropped from the study because they had begun operation after 1968. It was felt that exposures in such plants would be too recent and too brief to provide useful data. Study of one other plant was deferred because it had stopped production of vinyl chloride seven years ago, and appeared to present difficulties in identifying an exposed population.

In addition, three more plants were excluded from analysis because, when data analysis began, it was found that information from these plants was defective in one of several respects (e.g., no exposure data, no job histories available for terminated employees, etc.).

The present report therefore deals with 35 domestic plants involved in either VCM or PVC production, which provided a study population of 8384 individuals.

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IV. DATA COLLECTION

In each plant, data were collected for each worker stated by the plant management to have been employed for at least one year in a job involving exposure to vinyl chloride. In some plants, particularly those producing the monomer, this determination could be made on the basis of job titles. Usually, however, exposure was a function of both job title and the location of the job in the plant, so that the assessment of exposure had to be made on a case-by-case basis by plant officials.

Data were collected for as far back in time as complete records were kept. In most cases this covered the entire history of the plant. In others, records were kept for a fixed period such as a decade. In a few, records were kept for different periods, depending on whether the worker had died on the job or had left employment.

In the latter case it was necessary to exercise care in defining the period for which study data were to be collected. For example, if a plant kept records for five years on those who left employment, but kept them indefinitely for those who died on the job, no termination could be included in the study unless it occurred within the last five years. Data from the earlier period would be biased for the purpose of this study, since a worker had to die to be in the records for the earlier period. The policy therefore was to determine how long each kind of record was kept (quit, discharged, retired and alive, retired and deceased, died while employed) and to define the study period as the shortest of these.

One problem which arose in the PVC plants resulted from the fact that a worker could transfer within the plant from exposed to non-exposed jobs. Therefore, even though the number of workers in exposed jobs at a given

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VINYL CHLORIDE

Texas City Plant

Case No.	Cause of death
1	Subarachoid hemorrhage
2	Myocardial infarction
3	Arteriosclerotic heart disease
4	Rupture of liver due to trauma
5	Laceration of right jugular vein/ auto accident
6	Myocardial infarction
7	Coronary occlusion
8	Coronary occlusion
9	2° and 3° body burns due to blast injury
10	Cerebral injury from auto accident
11	Explosive trauma, generalized
12	Carcinoma lung
13	Lymphoscarcoma disseminated
14	Carcinoma pancreas
15	Hepatic cirrhosis (history of alcoholism)
16	Arteriosclerosis

UCTC 20854

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