

# A MORTALITY STUDY OF TEXAS DIVISION EMPLOYEES EXPOSED TO VINYL CHLORIDE

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## INTRODUCTION

This report examines the mortality experience of workers occupationally exposed to vinyl chloride at the Texas Division. The study parallels one conducted at the Midland Division. However, the results of the two studies are not directly additive because considerably lower exposures were experienced by the Texas Division employees.

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## METHODOLOGY

Western District of New York  
Case No. 84-CV-0333 S(H)  
General Industrial Company

### Selection of the Population-at-Risk

The exposed-to-risk population included all employees of the Saran V<sub>1</sub>V<sub>2</sub> Department with the exception of salaried women personnel. The interval covered in selecting the population was 1949 through 1963. January personnel lists for each of these years were examined to identify inscope employees. Through this mechanism, a total of 167 men were identified.

Because the procedure for identifying employees in the exposed-to-risk population used only January lists, a few individuals with less than one year of exposure might not be included in the study. However, virtually all employees with several years of exposure would have been identified. No mortality follow-up of released employees other than retirees was undertaken.

Recent industrial hygiene data (1972) have indicated that T.W.A. exposure levels to vinyl chloride for all jobs within the V<sub>1</sub>V<sub>2</sub> area are well below 50 ppm. The exposure patterns were characterized as involving very low background levels with occasional short term excursions to higher levels (e.g. over 500 ppm). A number of other chlorinated hydrocarbons were present in the plant atmosphere, including ethylene dichloride. Discussions with personnel familiar with past operations did not indicate that prior exposure levels differed greatly from recent levels.

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It was felt that lab assistants who collected samples from the production streams might have experienced the highest vinyl chloride exposures. Some high exposures to ethylene dichloride may have been experienced in the past years.

In the analyses, exposure was quantified only in terms of years on the job within the department. No attempt was made to distinguish between different job classifications within the department.

The employment and vital status of the exposed population as of January , 1973, was as follows:

| <u>Employment and Vital<br/>Status Group</u> | <u>Total<br/>Group</u> | <u>&lt;1 Yr.<br/>Exposure</u> | <u>1-6 Years<br/>Exposure</u> | <u>6+ Years<br/>Exposure</u> |
|----------------------------------------------|------------------------|-------------------------------|-------------------------------|------------------------------|
| Total Group                                  | 167                    | 17                            | 72                            | 78                           |
| Still Working For Company                    | 74                     | 4                             | 17                            | 53                           |
| Retired                                      | 10                     | 0                             | 5                             | 5                            |
| Transferred                                  | 7                      | 0                             | 2                             | 5                            |
| Releases Other Than Retirees                 | 66                     | 11                            | 44                            | 11                           |
| Deceased                                     | 10                     | 2                             | 4                             | 4                            |

#### Sources of Mortality Data and Comparison Population

The mortality analysis is based on copies of death certificates received by the Company Group Insurance Department as proof of death. A cohort of 4,100 hourly employees of the Texas Division followed between 1954 and 1973 served as a control population.

Mortality rates by age group and year of death were multiplied by the appropriate years at risk in the exposure group to provide the expected number of deaths. Since the Texas Division mortality rates for total malignant neoplasms closely paralleled Texas white male mortality rates, these rates were used in computing the expected number of deaths due to malignant neoplasms.

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## RESULTS

The observed and expected deaths by duration of exposure and interval since initial exposure are shown in Table 1. The frequencies are too small for statistical tests of significance to be meaningful.

A brief summary of the exposure history for each decedent is shown below:

| <u>Cause of Death</u>                                                             | <u>Department Work History</u>                |
|-----------------------------------------------------------------------------------|-----------------------------------------------|
| 1) Cancer of lip with metastases to lung and neck Died 9/66                       | Janitor 8/62-9/66                             |
| 2) Alveolar Cell Carcinoma Died 11/71                                             | Operator 4/56-9/59<br>Lab Assistant 9/59-5/67 |
| 3) Carcinoma Brain and Lungs Died 12/58                                           | Operator & Shift Foreman 10/49-12/58          |
| 4) Malignant Mediastinal Tumor Unclassified with generalized metastases Died 1/63 | Operator 1/62-1/63                            |
| 5) Ischemic Heart Disease Died 6/71                                               | R&D Engineer 9/48-10/49                       |
| 6) Abscess Left Frontal Lobe Died 3/58                                            | Welder 5/52-2/53                              |
| 7) Acute Myocardial Infarction Died 2/65                                          | Operator 9/51-2/65                            |
| 8) Accidental Drowning Died 5/61                                                  | Operator 3/52-5/61                            |
| 9) Auto Accident Died 7/58                                                        | Clerk 10/50-3/51                              |
| 10) Unknown Died 9/50                                                             | Clerk 9/48-9/50                               |

Interpreting the significance of such small numbers should be left to a physician.

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