

**Dow U.S.A.**

Building B-101

The Dow Chemical Company
2301 N. Brazosport Blvd
Freeport, Texas 77541-3257**OCCUPATIONAL HEALTH SUMMARY REPORT**

LOCATION: UNIT I (VINYL CHLORIDE PRODUCTION)

PERIOD COVERED: August 24 - October 23, 1992

MEDICAL:

*C. K. Browdy MD**1-6-93*C. K. Browdy, M.D.
Occupational Health Associate

Date

INDUSTRIAL HYGIENE:

*M. A. Blue**1-7-92*M. A. Blue
Industrial Hygienist

Date

APPROVED:

*Tom Lippman**1-8-92*T. E. Lipps, M.D.
Director, Occupational Health

Date

REVIEWED:

*Sam Smolik**1-14-93*S. L. Smolik
Superintendent

Date

cc: D. E. Cragar
J. H. Saunders, M.D.
J. H. Lippman
Summary File

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OCCUPATIONAL HEALTH SUMMARY REPORT

This is a voluntary participation program. Twenty-nine individuals were identified as having ten or more years of work experience in the vinyl chloride production area. Because of a clerical error two individuals were not offered examinations. Twenty-seven individuals were examined between August 24, 1992, and October 23, 1992, for a 100% participation rate.

The Chemical and Physical Agent Inventory (CPAI) for Unit I, the vinyl chloride monomer production plant, shows that the chemical and physical agents of greatest concern are vinyl chloride, ethylene dichloride, hydrogen chloride, carbon tetrachloride, sodium hydroxide, and noise. Based on a review of current Industrial Hygiene monitoring data described below, the Process and Unit Technician job classifications are followed on the Vinyl Chloride Medical Surveillance Requirement (MSR). This MSR conforms with the OSHA Vinyl Chloride Standard.

The 1989 Industrial Hygiene monitoring data is summarized in I. H. Report No. OC-3138-89C. Eight-hour time-weighted average (TWA) and short-term monitoring for vinyl chloride, ethylene dichloride, ethyl chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and carbon tetrachloride was conducted. All eight-hour TWA potential exposures to vinyl chloride were below the action level of 0.5 ppm except for the Loading Technician which was 0.94 ppm. The OSHA Permissible Exposure Limit is 1.0 ppm. Short-term monitoring for the Loading Technician showed potential exposures ranging from 0.17 to 11 ppm. The higher concentrations occurred during tank car sampling. In addition, the Process Technicians in the vinyl distillation area exceeded the Short-Term Exposure Limit (STEL) for vinyl chloride. Process Technicians in the direct chlorination and repair areas exceeded the STEL for ethylene dichloride. New sampling systems have been implemented in the loading and direct chlorination areas to reduce exposures. Employees wear full face airline respirators whenever there is a significant potential for exposure. Exposures to the other five chemicals listed above were less than 5% of their respective Industrial Hygiene Guides.

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The 1990-1991 Industrial Hygiene monitoring data for furnace maintenance is summarized in I. H. Report No. OC-3702. Monitoring was done for hydrogen chloride, vinyl chloride, ethylene dichloride, and dust. Average personnel exposures were significantly less than the acceptable guidelines for each chemical except ethylene dichloride. Average exposures to ethylene dichloride at 7.4 ppm during top 90 removal and 5.7 ppm during the let down valve removal exceeded the Short-term Exposure Limit of 2 ppm. Area samples taken one foot from the let down valve and the top 90 on July 26, 1991, at >20 ppm exceeded the acceptable guideline of 5 ppm ceiling for hydrogen chloride. Full-face airline respirators were worn during the top 90 removals.

The 1990-1991 Industrial Hygiene monitoring data for tank car off-loading activities is summarized in I. H. Report No. OC-3652. In 1990 average eight-hour time-weighted average exposures for the Loading Technicians were 1.7 ppm which exceeded the OSHA Permissible Exposure Limit for vinyl chloride of 1 ppm. In 1991 due to adjustments made to the laboratory hood and purge times, average exposures were reduced to 0.69 ppm, which exceeds the OSHA Action Level. Short-term personnel monitoring during tank car hook-up and sampling/analysis. Full-face air-purifying respirators with canisters approved for vinyl chloride use were used during tank car hook-up, sampling, and analysis. Adjustments to the laboratory hood resulted in a significant reduction in potential exposures during the analysis of samples, therefore, respirators are no longer required during analysis.

The 1991 Noise Survey is summarized in I. H. Report No. OC-3700-90N. Average personal noise exposures were less than 50% (85 dBA) of the OSHA Permissible Exposure Limit of 90 dBA for all monitored job classifications. These job classifications are not in the Texas Operations Hearing Conservation Program.

There are twenty TSCA 8(d) chemicals present. They are ethylene dichloride, asbestos, 1,1,1-trichloroethane, 1,1,2,2-tetrachloroethane, 1,1,1,2-tetrachloroethane, chloroform, ethyl chloride, perchloroethylene, pyridine, methylene chloride, 1,1,2-trichloroethane, 1,1-dichloroethane, hexachlorobutadiene,

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chloroprene, toluene, epichlorohydrin, propylene oxide, crotonaldehyde, isopropyl alcohol, and propylene dichloride.

There are no individuals who have limitation of respirator usage.

The liver is considered the main target organ for vinyl chloride. Two individuals of the twenty-seven tested have minimal elevation of one of the five liver enzyme tests done. Two individuals have mild to moderate elevations of two of the five liver enzyme tests done. One of these individuals has been permanently restricted from exposure to chlorinated hydrocarbons because of a personal medical condition. His restrictions are being accommodated at his present worksite until his transfer is effective.

Individuals with life-style factors that are amenable to medical or dietary intervention include the following: five smokers, twenty-two individuals who are overweight, eight individuals with uncontrolled hypertension, and eighteen individuals with elevated cholesterol levels. Please see Attachment B for a graphic representation of this data. Please contact the Up-With-Life Program (238-4334) for assistance in modification of these life-style risk factors.

Attachments

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ATTACHMENT A

January 6, 1993

MEDICAL LIMITATION OF RESPIRATOR USAGE

The following twenty-nine individuals have no medical limitation of respirator usage:

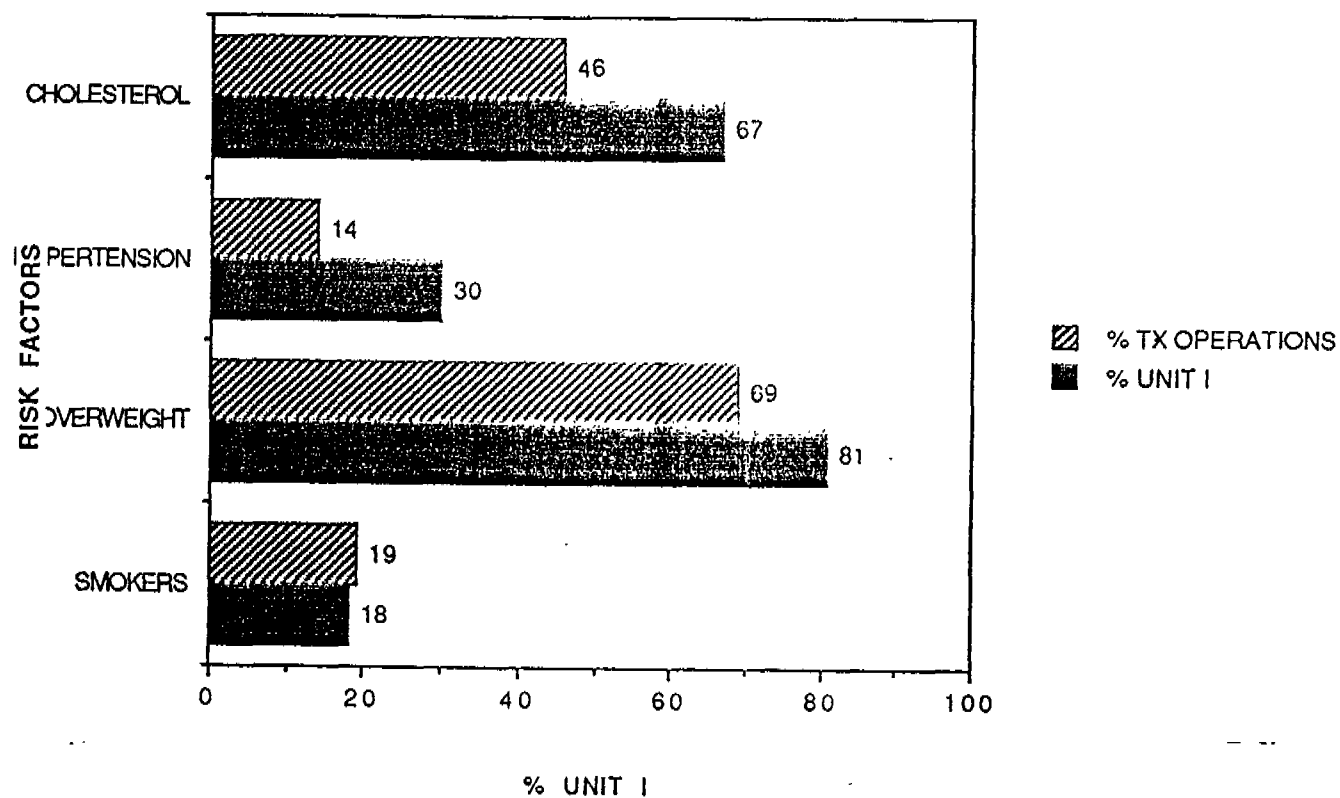
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Data from "UNIT I 1/93 DATA"



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