



Building B-101

The D w Ch mical Company
2301 N. Brazosport Blvd.
Freeport, Texas 77541-3257

REVIEWED

OCCUPATIONAL HEALTH SUMMARY REPORT

LOCATION: UNIT I (VINYL CHLORIDE PRODUCTION)

PERIOD COVERED: August 23 - September 23, 1994

MEDICAL:

C. K. Browdy M.D. 10-17-94
C. K. Browdy, M.D. Date
Occupational Health Associate

INDUSTRIAL HYGIENE:

J. P. Jurgiel 10-28-94
J. P. Jurgiel Date
Industrial Hygienist

REVIEWED:

M. B. Moran 11-1-94
M. B. Moran Date
Superintendent

cc: L. J. Burmeier
J. H. Saunders, M.D.
S. C. Carrington
Summary File

OCCUPATIONAL HEALTH SUMMARY REPORT

This is a voluntary participation program. Twenty-one individuals were identified as having ten or more years of work experience in the vinyl chloride production area. Twenty individuals were examined between August 23, 1994, and September 23, 1994, for a 95% 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.

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

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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 1992 Industrial Hygiene monitoring data for tank car off-loading activities is summarized in I. H. Report OC-3951. Results of eight-hour time-weighted average personnel monitoring with an average of 0.62 ppm continue to exceed the OSHA Action Level of 0.5 ppm. Short-term monitoring was conducted during tank car hook-up, sampling, sample analysis and disconnect. All results were non-detectable with the exception of one sample during sample analysis. Results of area monitoring in the tank car off-loading laboratory were both non-detectable, a significant decrease from average results in 1991 of 0.84 ppm.

The 1994 Industrial Hygiene monitoring data for vinyl chloride is summarized in I. H. Report No. OC1-4951C1. No respiratory protection was required or worn during any of the monitoring. Full-shift vinyl chloride monitoring for the Vinyl Distillation Technicians ranged between ND (0.11 ppm) and 0.32 ppm. Short-term excursion vinyl chloride monitoring for the Vinyl Distillation Technician ranged between ND (0.43 ppm) to 9.5 ppm. Two sample results exceeded the OSHA STEL of 5 ppm (9.5 and 5.5 ppm), due to leaking sample bombs. As a result, monthly monitoring is required as per 29CFR1910.1017. Full-shift monitoring for the Laboratory Technician was ND (0.11 ppm). Short-term monitoring during the analysis of the sphere sample was ND (0.38 ppm). The task of emptying waste containers from the lab hoods into the waste pot in the process area is normally done periodically by the individual area process technicians. The Lab Technician was monitored while he emptied all of the waste containers (a worst-case scenario) and the result was 4.2 ppm.

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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.

All individuals have unrestricted respirator use. Please see Attachment A..

The liver is considered the main target organ for vinyl chloride. Five individuals of the twenty tested have minimal elevation of one or more of the five liver enzyme tests done. This is very slightly higher than expected in a group this size. Because these elevations are minimal, I recommend that they not be repeated until they are scheduled again in six months.

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

Attachments

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ATTACHMENT A

October 12, 1994

MEDICAL LIMITATION OF RESPIRATOR USAGE

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

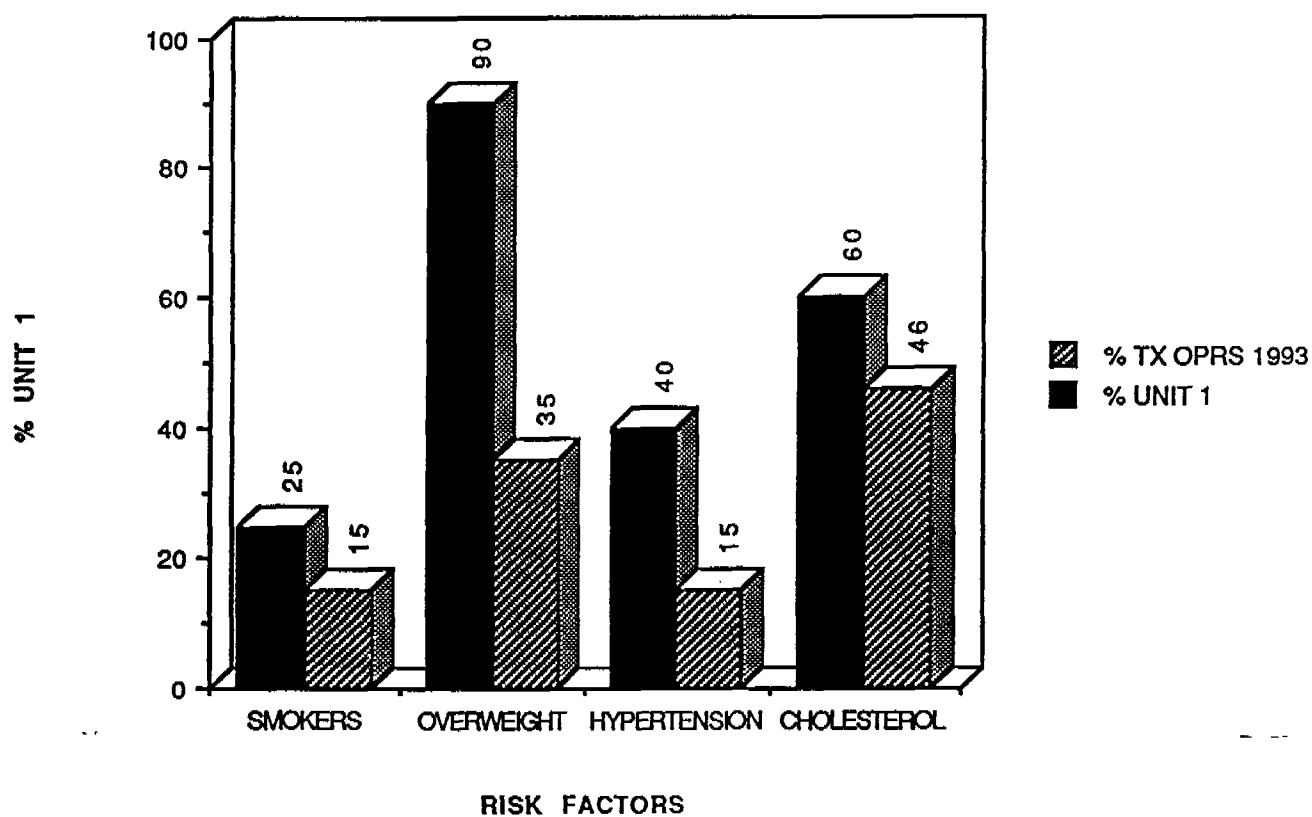
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ATTACHMENT B

Data from "UNIT 1 10/12/94"



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