



Building B-101

The Dow Chemical Company
2301 N. Brazosport Blvd.
Freeport, Texas 77541-3257

OCCUPATIONAL HEALTH SUMMARY REPORT

LOCATION: UNIT I CONTRACTORS
(VINYL CHLORIDE PRODUCTION)

PERIOD COVERED: May 23 - June 9, 1995

MEDICAL:

C. K. Browdy MD
C. K. Browdy, M.D.
Occupational Health Associate

8-16-95
Date

INDUSTRIAL HYGIENE:

J. Jurgie
J. Jurgie
Industrial Hygienist

8-24-95
Date

REVIEWED:

D. R. Correll
D. R. Correll
Manufacturing Process Leader

5/29/95
Date

cc: L. J. Burmeier
Summary File

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OCCUPATIONAL HEALTH SUMMARY REPORT

This is a voluntary participation program. The group population is eight. Five individuals were examined between May 23, 1995, and June 9, 1995, for a 62% 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. These 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 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

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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 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 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 were two audiograms done. There were no standard threshold shifts as defined by the OSHA Noise Standard.

Five individuals have limitation of respirator usage based on initial screening of the medical examination data. Please see the attached list for medical limitation of respirator usage. If these medical restrictions interfere with an individual's job requirements, further evaluation at the Occupational Health Department should be arranged to fully assess the need for medical limitation of respirator usage.

The liver is considered the main target organ for vinyl chloride. One individual of the five tested has a minimal elevation of one of the five liver enzyme tests done. This group is too small to draw any conclusions.

Please remove the attachment before posting this report or filing it in the Industrial Hygiene Manual.

Attachment

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ATTACHMENT

August 9, 1995

MEDICAL LIMITATION OF RESPIRATOR USAGE

The following five individuals may wear respirators for escape purposes only:

The following three individuals have no medical limitation of respirator usage:

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