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INDUSTRIAL HYGIENE REPORT

ETHYLENE OXIDE SURVEY -
RESEARCH AND DEVELOPMENT
LOUISIANA DIVISION

CRI NO. _____

FILE NO. LAD-IH-81.03DATE JANUARY 29, 1981AUTHOR WILLIAM E. LEDFORD*William E. Ledford 1/29/81*CHECKED *Charles Halpern*DATE 2-2-81

SUMMARY

Personnel and area monitoring for ethylene oxide was conducted in the A Wing of the R&D complex and at the showtube area in the Glycol II Plant. All exposures were well below the 3 ppm Dow Industrial Hygiene Guide for EO. Additional monitoring is planned at the EEM facility in the central pilot plant area when the unit is operating.

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INTRODUCTION

Personnel and area monitoring for ethylene oxide was conducted in several areas of R&D. The Dow Industrial Hygiene Guide for ethylene oxide exposure was reduced in 1980 to 3 ppm for an eight-hour time weighted average.

DISCUSSION

The monitoring in this survey was conducted in the A-complex of the Research and Development complex and at the showtube facility at Glycol II. Persons and areas monitored were limited to those judged to have the highest potential exposure to EO. The results appear in Table 1. All exposures were well within acceptable limits for an eight-hour time weighted average. The Dow IHG for ethylene oxide also has a short-term exposure limit of 50 ppm, but no short-term exposures were evaluated as part of this particular study.

SAMPLING AND ANALYTICAL

The samples were collected on activated charcoal using 1 gram charcoal tubes and MDA low flow pumps at a flow rate of 20 cc/minute. The sampling apparatus was calibrated using a soap bubble meter. All samples were stored in a freezer until the analysis was performed. The charcoal was desorbed using 10 ml of CS₂ and the analysis was performed by FID gas chromatography. The GC column used was a 70/30 Oronite NIW/Carbowax 1500 on Carbopack C. Recovery was determined to be 86% for this method.

PLANS

Additional monitoring is planned at the EEM facility in the central pilot plant area of R&D. The unit was not operating at the time of this survey. In addition, some short-term samples are planned during specific tasks of highest potential exposure to EO.

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TABLE 1
RESULTS OF ETHYLENE OXIDE MONITORING
IN RESEARCH AND DEVELOPMENT FACILITIES
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<u>Sample Number</u>	<u>Date</u>	<u>Sample Description</u>	<u>Ethylene Oxide Concentration ppm v/v</u>
1783	1/8/81	Outside A-complex near EO reactor vent, 460 min.	0.2
1784	1/8/81	Behind control panel near EO reactors in Lab A-16, 460 min.	0.4
1785	1/8/81	Lab Technician, operating showtube facility at Glycol II, 397 min.	0.3
1786	1/9/81	Lab Technician, operating EO reactors in Lab A-16, 467 min.	0.2
1787	1/9/81	Showtube control room, 410 min.	0.3
1788	1/9/81	3rd deck of showtube structure, not venting, 410 min.	0.4
1804	1/12/81	Lab Technician, operating EC mini-reactor, 445 min.	0.6
1805	1/12/81	Lab Technician, cubicle control room, 443 min.	0.3
1806	1/12/81	3rd deck of showtube structure, venting several tubes, wind from NE, 432 min.	0.1

DOW IHG = 3 ppm T.W.A.

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