



DOW CHEMICAL U.S.A.

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INDUSTRIAL HYGIENE REPORT

STYRENE SURVEY
CELL SERVICE (Old CA I Area)

FILE NO. 110-20-6

DATE June 25, 1975

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CHECKED

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DATE June 25, 1975

SUMMARY

Conducted styrene survey for Cell Service (old CA I Area). Results were favorable. Highest styrene level recorded was 15 ppm (TLV is 100 ppm). General conditions of the area have been much improved through housekeeping and physical improvements.

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STYRENE SURVEY CELL SERVICE
(Old CA I Area)

INTRODUCTION

Conducted a styrene survey at Cell Service (in the old CA I area which is now used for cell construction and repair work).

METHODOLOGY

The Sipin Personal Sampler pump, model SP-1, with charcoal tubes, was employed to collect the time weighted average results. Six strategically located stationary samples and six personnel samples were collected in this manner. Six samples were also collected using the Model 31 Drager Pump which yields an immediate result for that particular point in time (see attached Results sheet). The building and personnel were monitored while Derakane 411-G50 was being mixed and poured for normal cell construction and repair operations. All samples were taken at breathing zone level.

RESULTS

The highest styrene level recorded with the Sipin pump was 2.68 ppm by volume (time weighted average) which is well below the OSHA standard or TLV of 100 ppm. This sample was caught near the vent from the mixing room (described below).

The highest level recorded with the Drager pump was 15 ppm while operators were pouring Derakane on cells. The remaining five samples indicated a level below 10 ppm, and well below the established threshold limit value.

OBSERVATIONS

Several substantial improvements have been made in the cell service operations. A portable mixing building has been installed with a specially designed vent system to segregate the mixing area from the general work area of the building. (Large amounts of Asbestos and Derakane are mixed within the mixing building where respiratory equipment is required).

Another room has been constructed to store Asbestos which is kept locked and can be opened by supervision only.

The sandblasting operation outside the building has been moved further away from the cell repair work area to lessen noise and dust problems.

Housekeeping has been stressed with a concerted effort made to clean up the entire cell service area.

CONCLUSIONS

Much progress has been made in the cell service area and styrene vapors are below the established TLV, however, the vent system of the mixing room could be improved by extending it outside of the building. This would not involve a great cost and would eliminate some styrene vapor exposure, especially in the winter months when ventilation is reduced.

Supervision is responsible for, and must stress potential health hazards, and survey results with operators and laborers in the area. It is essential that personnel understand the seriousness of the health hazards and the proper protective measures that are to be taken. A survey of the cell repair area must be made within 12 months of the previous survey, or whenever normal operation procedures are changed and the possibility of an exposure increase exist.

STYRENE MONITORING
(SIPIN PERSONAL SAMPLER PUMP)

<u>Sample Time</u>	<u>Date</u>	<u>Volume Sampled</u>	<u>(TWA) ppm(v)</u>	<u>Location & Activity</u>
1 6hrs 35min	4-17-75	23.31 liters	2.68	Outside mixing room near exhaust vent
2 6hrs 35min	4-17-75	19.59 liters	2.33	Mixing Derakane inside mixing room
3 5hrs 45min	4-16-75	18.48 liters	0.26	Middle of building
4 5hrs 45min	4-16-75	19.82 liters	1.52	Inside mixing room mixing Derakane
5 5hrs 45min	4-16-75	17.29 liters	2.09	Vent from mixing room
6 6hrs 30min	4-17-75	20.32 liters	0.47	Center of work area
7 5hrs 47min	4-18-75	17.83 liters	0.135	Mixing and pouring Derakane on cells
8 5hrs 40min	4-18-75	21.78 liters	0.66	Pouring Derakane on cells
9 5hrs 38min	4-18-75	20.96 liters	0.75	Mixing and pouring Derakane on cells
10 5hrs 47min	4-21-75	14.99 liters	1.60	Mixing and pouring Derakane on cells
11 5hrs 47min	4-21-75	17.48 liters	1.86	Mixing and pouring Derakane on cells
12 5hrs 46min	4-21-75	18.93 liters	2.29	Inside mixing room

Personnel and stationary samples were caught for styrene exposure while workers were mixing and using Derakane 411-C50 with Asbestos, Nytal 300 talc, and activators. The Derakane slurry is poured on the cells (gluing the anodes to the frames).

TLV is 100 ppm for styrene

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DRAGER ANALYSIS FOR STYRENE

<u>Sample</u>	<u>Results</u>	<u>Activity</u>
1	15 ppm	Pouring Derakane to glue anode assembly to frame
2	<10 ppm	Mixing Derakane, Asbestos and Nylal 300 in mixing room
3	<10 ppm	Pouring Derakane to glue anode assembly to frame
4	<10 ppm	Measured vapors coming from mixing room while Derakane was being mixed with Asbestos, Nylal 300, and activators
5	<10 ppm	Measured styrene vapors middle section of building
6	<10 ppm	Measured styrene vapors in southwest corner of building (corner nearest to area where anodes are being glued to frames)