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LAB. COOP. LETTER AND REPORT NUMBER

NBH34.21-21-3(5)

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MIDLAND, MICHIGAN	DEPARTMENT DIG Chemical Biology Research	DATE August 3, 1973
AUTHORS M. F. Stevenson <i>M.F. Stevenson</i> 8/3/73		PROJECT NUMBER 9082000
TITLE EVALUATION OF ASBESTOS EXPOSURES, CHLORINE CELLS PLANT, 851 and 295 BUILDINGS		

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INFORMATIVE SUMMARY WITH CONCLUSIONS

The pulping operator's exposure to asbestos fibers was evaluated during the mixing of asbestos at the Chlorine Cells Plant, 851 Building. Background readings were taken at 295 Building after several cells had been through the water jet cleaning operation. Time-weighted average exposures to asbestos are within acceptable levels.

Recommendations include the continuing use of respiratory protection during handling of dry asbestos and the use of "wet suits" to cut down on the transport of dry asbestos fibers into the lunch and control rooms.

Samples taken by M. F. Stevenson and G. H. Flores.

REVIEWED BY *H.R. Hoyle* 8-3-73

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ISSUED TO

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PROBLEM

The Industrial Hygiene Section of DIG Chemical Biology Research was asked to evaluate the exposures of Utility men to asbestos fibers during preparation of slurry in the pulping operation of chlorine cells.

CONCLUSIONS AND RECOMMENDATIONS

1. During the handling of dry asbestos prior to mixing, peak exposures exceeded the Threshold Limit Value of 5 fibers/ml and approached the maximum allowable of 10 fibers/ml. (See Table 1). The Utility man's time-weighted average exposure to asbestos was within acceptable levels.
2. The men mixing the slurry should wear respiratory protection during this operation.
3. Wearing of wet suits, "rain suits", should continue to cut down on the transport of dry asbestos fibers into the lunch and control rooms.
4. When washing down the work area asbestos fibers tend to cling to the pipes just below the grating but above

ground level. In time this might present an accumulated problem and unnecessarily expose those working below, especially when the fibers are dry.

5. Containment and improved cleanup systems at the bin are presently being evaluated by supervision. They have a plan to prevent asbestos fibers from falling to the pipes beneath the grating. Some thought is also being given to the containment of asbestos fibers when scooping into the mixing buckets.

6. Asbestos levels at 295 Building on the date sampled were acceptable.

PROCESS

Asbestos is brought up to the second level by way of lift truck. These bags are then opened and dumped into a storage bin with some evidence of fibers becoming airborne.

This asbestos is dumped into two different storage bins depending on the grade of asbestos needed. After the bins are filled, buckets are filled about half full and water

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mixed to get a slurry. The buckets are then taken to the chlorine cells and emptied. The number of buckets used depends on the number and severity of the leaks.

SAMPLING AND ANALYSIS

Breathing zone air samples were collected on millipore filter cassette (0.8 micron pore size) at a sample rate of about 2.0 lpm using MSA personnel sampling pumps.

The fibers on the filters were counted by the standard phase-contrast microscopy technique at 450 magnification by the Midland Division Microscopy Laboratory (AL #59696).

PRESENTATION OF DATA

Table I shows the Utility workers peak exposure to asbestos fibers during the pulping operation. One of these samples was not within an acceptable level based on present standards.

Table II shows a background reading in 295 Building after several cells had been through water jet cleaning. Levels seen here were within an acceptable range.

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Table III shows the Utility workers exposure to asbestos fibers based on an eight hour day when doing pulping and laboratory work. The time-weighted average and peak exposures were within acceptable levels based on the present standard.

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TABLE I

CHLORINE CELLS PULPING OPERATION, 851 BUILDING

Exposure to Asbestos Fibers

<u>Operation</u>	<u>Number of Samples</u>	<u>Asbestos Concentration</u>	
		<u>Range</u>	<u>Average</u>
Scoop-mix to slurry	3	2.69-7.86*	4.74
Scoop-mix-dump into chlorine cells	1	0.19	0.19

*Fibers/ml.

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TABLE II

CHLORINE CELLS CLEANING, 295 BUILDING

Background Levels of Asbestos

<u>Operation</u>	<u>Number of Samples</u>	<u>Asbestos Concentration</u>	
		<u>Range</u>	<u>Average</u>
Water jet cleaning area and background.	2	0.56-1.02*	0.79

*Fibers/ml.

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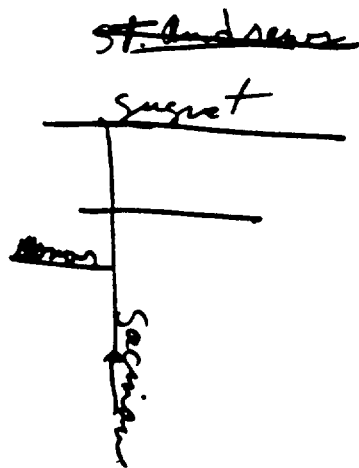
TABLE III

CHLORINE CELLS PULPING OPERATION, 851 BUILDING

Exposure to Asbestos Fibers

<u>Operation</u>	<u>A</u> Time per Eight Hour Day (min.)	<u>B</u> Average Conc. (Fibers/ml)	<u>A x B</u> 480
Unload-scoop-mix- dump slurry.	242	5.87	0.69
Unloading	20	0.23	0.01
Cleanup	15	1.29	0.04
Laboratory	~143	--	0.00
Lunch and Breaks	<u>60</u>	<u>--</u>	<u>0.00</u>
TIME-WEIGHTED AVERAGE	480		0.74
THRESHOLD LIMIT VALUE*			5.0
MAXIMUM ALLOWABLE CONCENTRATION		10.0	

*Threshold Limit Value (TLV) - The time-weighted average concentration to which it is believed that most people could be exposed daily without adverse effects.



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