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PLAINTIFF'S EXHIBIT

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LOUISIANA DIVISION
PLAQUEMINE, LOUISIANA 70764
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INDUSTRIAL HYGIENE REPORT

BI ANNUAL ASBESTOS STUDY
CELL SERVICE BLOCK 56
LOUISIANA DIVISION

CRI NO. 783641

FILE NO. LAD-IH-78.01

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SUMMARY

The asbestos in air monitoring in the Cell Service Block 56 has been completed for the last half of 1977. Survey results were satisfactory and well below the acceptable threshold limit value of 2 fibers per cubic centimeter.

Of twenty one (21) samples taken, the high was 0.09 fibers per cubic centimeter of air and the low was < 0.01 fibers per cubic centimeter.

Good housekeeping, strict safe operating procedures, and a constant vigil for problem areas are most important considerations for a successful abatement program. Employees should be informed of the survey results and review the consequences of overexposure to asbestos fibers. (See Attachment No. 2.)

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INTRODUCTION

The required asbestos in air monitoring for the last half of 1977 has been completed. The survey, performed twice annually, serves to protect the workers against overexposure to asbestos and fulfills the requirements of the Federal Occupational Safety and Health Act.

The new Cell Service Building, in Block 56, has several features that are improvements over the old Cell Service operation. The new facility has an improved lighting and ventilation system, a segregated area to handle and store dry asbestos, a new automatic debagging operation which eliminates handling open asbestos bags and automatically stores the empty bags in an impermeable plastic container. The new area also features an asbestos recovery system which makes for better housekeeping. Caustic and HCl have been eliminated from the cell service operation, which also results in a better work environment. Another improvement is the addition of a bonding material to the asbestos slurry, which is applied to the cathodes. This bonding agent enhances the cathodes life span and performance while greatly reducing exposure to dry, airborne asbestos fibers when handling dried cathodes. Generally, the conditions are improved with the work area much easier to keep clean.

DISCUSSION

The Cell Service Block is roughly divided into five areas. These five areas are cleaning, asbestos recovery, assembly line, asbestos drawing system, and the administrative areas.

The used cells arriving in the block to be recycled are first sent to the cleaning area on the north end of the Cell Building. The cells are placed in the soak pits to soften. Later, the cathodes are removed and sent to the cathode washer to be waterblasted and washed clean.

The asbestos waste from the cathode washer pit and the Cell Service Building recovery ditches is pumped through a clarifier to a filtering system to collect the asbestos which is then transported to a designated landfill area and buried. Any overflow that finds its way to the settling pond, located at the extreme north end of the block, is periodically cleaned out and carried to the landfill to be buried. The water is reclaimed and reused in the block.

The cell frame assemblies are placed on the assembly line. (The assembly line extends approximately three-fourths the length and along the eastern half of the building.) The cell frame assembly moves from north to south down the assembly line while necessary repairs are completed. Later, the cathodes and anodes are assembled and the cells are completed.

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Newly washed cathodes, acceptable for recycling, are moved to the asbestos drawing system to be coated with asbestos and dried in the ovens before returning to the assembly lines. The asbestos drawing system consists of pumps, lines, vessels, and a drawing vat which is located on the west side of the building. The drawing vat is located inside the building next to the asbestos storage room. The asbestos room also contains the debagger system which opens the bags and dumps the asbestos into the closed slurry mix tank. This room is kept locked at all times by supervision unless work is in progress. Only necessary people are admitted into the area and respirator protection is required. A strict housekeeping policy is enforced.

The offices, conference room, lunchroom, stockroom, changeroom, and restrooms are situated on the east side of the building, while the instrument shop and maintenance shop are located on the west side of the building.

The three major areas of concern for asbestos exposure are 1) the asbestos storage room, 2) the debagger area, and 3) the area extending from the drawing vat to the drying oven.

The area extending from the drawing vat to the drying oven presents a potential exposure problem; however, daily washdowns are practiced and sampling indicates levels to be well below the allowable threshold limit value.

Another factor revealed by the survey was that job classifications in the actual work area are not very distinct. Some jobs are rotated on a semi-annual basis; however, most employees regardless of classification will perform the same duties over a given period of time. This is due to a cross training program practiced in this block.

EXPERIMENTAL

Sampling Method

Personnel samples were collected from the operators breathing zone with a 37 mm diameter 0.8 micron pore size millipore filter mounted on an open face filter holder and attached to the operators lapel. These cassettes were connected to monitoring pumps calibrated with a soap bubble meter to operate at a range of 1.7 to 2.0 liters per minute.

Area samples were collected utilizing the same equipment and method as the personnel samples. Sampling pumps were located approximately ten feet downwind from the asbestos storage area and approximately three feet above ground.

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Analytical

After obtaining the sample on the millipore filter, a four square grid section is cut from the exposed filter and placed atop a drop of clear mounting solution. The sample is centered on a microscope slide, covered with a cover slip, and allowed approximately fifteen minutes to clear up before the fiber counting may begin. (The mounting solution is prepared by placing 3 ml each of diethyl oxalate and dimethyl phthalate in a container with 0.6 g of ground up plain white millipore filter paper which dissolves into a clear solution in approximately three days.)

The samples are magnified 500 times with the Reichert Zetopan optical microscope and Nomarski Interference Contrast is used. All fibers over 5 microns in length with a 3 to 1 length to width ratio are counted as fibers (only one of the four squares is selected to count).

After the square grid is selected to be counted, twelve passes are required with the microscope to cover the entire square. All fibers greater than 5 microns in length are counted. To obtain the fibers/cc concentration (greater than 5 microns in length) the following calculation is used.

$$\text{Fibers/cc} = \frac{\text{fiber count (> 5 microns in length)} \times \text{sizing factor (92)}}{\text{cc of air} \times \text{for filter}}$$

(sampling time in minutes x flow rate of pump)

Standards are compared with other locations to confirm the integrity of the counting and analytical determination of fibers present.

RESULTS (See Attachment 1)

Monitoring results indicate all samples were well below the present TLV of 2 fibers per cubic centimeter greater than five microns in length. These samples recorded a high of 0.09 fibers per cc, while four samples were less than 0.01 fibers per cc. (Results were rounded off to the nearest hundredth.)

The personnel samples obtained from the operators breathing zones recorded an average of 0.03 fibers per cc. Those samples collected while the operator was performing maintenance on the debagger indicated an average of .04 fibers per cc with a high of .09 fibers per cc on a 15 minute peak exposure samples.

The stationary samples recorded a time weighted average of 0.01 fibers per cc with one sample recording an exposure level of 0.09 fibers per cc near the debagging station.

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CONCLUSIONS

The monitoring results were satisfactory and well below the established threshold limit value of two fibers per cubic centimeter. However, due to the hazardous nature of asbestos, housekeeping and good safe operating procedures remain the most important considerations for a good abatement program. This must be a daily, job by job program to be successful and offer the greatest protection.

The cell service employees must be informed of this survey's results and the consequences of overexposure reviewed. (See Attachment No. 2.)

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Attachment 1

MONITORING RESULTS

<u>Sample Number</u>	<u>Date</u>	<u>Job Classification and Description</u>	<u>Sampling time (minutes)</u>	<u>Flow Rate (cc/min.)</u>	<u>Fibers/cc > 5μ in Length</u>
18	6-30-77	(SOT) Operator working hook-up job in cathode drawing area.	355	1800	0.03
19	6-30-77	(SOT) Operator working control board in cathode drawing area.	310	1800	0.01
20	6-30-77	(SOT) Operator working control board in cathode drawing area.	345	1800	0.09
21	6-30-77	Stationary samples located on east side of oven door (OV501) approximately 5 ft. above floor.	355	2000	0.01
22	7-07-77	(S.S.) Operator changing out blades on the debagger (DB509),	15	2000	0.09
23	7-08-77	(S.S.) Operator changing out blades on the debagger (DB509),	80	2000	0.02
24	7-08-77	(S.S.) Operator changing out blades on the debagger (DB509).		2000	0.01
25	8-03-77	Stationary samples located just south of Bl 501 (exhaust from OV501) approximately 5 ft. above floor.	300	1800	0.01
26	8-03-77	Stationary samples located approximately 25 ft. above Bl 501.	300	1800	0.01

Attachment 1 (Cont.)

MONITORING RESULTS

<u>Number</u>	<u>Date</u>	<u>Job Classification and Description</u>	<u>Sampling time (minutes)</u>	<u>Flow Rate (cc/min.)</u>	<u>Fibers/cc > 5μ in Length</u>
27	8-04-77	Stationary samples located just south of B1 501 (exhaust from OV501) approximately 5 ft. above floor.	510	1800	< 0.01
28	8-10-77	Stationary samples located west of P502 (just west of turbine compressor and cathode washer.) Area not washed down.	465	2000	0.01
29	8-10-77	Stationary samples located near F505 - "I" beam between turbine compressor and D505 "clears tank" area not washed down.	460	1800	0.01
30	8-10-77	Stationary samples located by start stopswitch on P505 B just west of "clears tank".	465	1700	0.01
31	8-10-77	Stationary samples located at bottom of stairs by D504 (clarifier tank) area not washed down.	470	1800	0.01
32	8-16-77	Stationary samples located on north wall of debagger (DB509). One 15 minute cycle of loading asbestos occurred during sampling period.	420	2000	< 0.01
33	8-16-77	Stationary samples located on south wall of debagger (DB509). One 15 minute cycle of loading asbestos occurred during sampling period.	420	2000	0.09

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Attachment 1 (Cont.)

MONITORING RESULTS

<u>Number</u>	<u>Date</u>	<u>Job Classification and Description</u>	<u>Sampling time (minutes)</u>	<u>Flow rate (cc/min.)</u>	<u>Fibers/cc > 5μ in Length</u>
34	11-23-77	Stationary samples located in Ramsey Scarlet warehouse in the asbestos storage area, Port Allen, Louisiana.	295	1700	< 0.01
35	11-23-77	Stationary samples located in Garig warehouse, River Road, Baton Rouge, in the asbestos storage area.	285	1700	0.01
36	11-30-77	(S.O.T.) operator controlling board in cathode drawing system (D513) approximately one hour spent away from the board.	335	1700	0.01
37	11-30-77	(O.S.) operator working hook-up job in cathode drawing area.	335	1700	< 0.01
38	11-30-77	(Laborer) working hook-up job in cathode drawing area.	335	1700	0.02

Minimum confidence 0.01 fibers/cc

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Attachment 2

CONSEQUENCES OF OVEREXPOSURE

COMPOUND: ASBESTOS

EXPOSURE LIMIT: 2 FIBERS/ML, < 5 MICRONS IN LENGTH

ODOR: NONE

EYES: CONTACT WITH THE DUST CAN CAUSE IRRITATION SIMILAR TO THAT CAUSED BY SIMILAR FOREIGN BODIES.

INGESTION: SOME EVIDENCE INDICATES THAT SWALLOWED ASBESTOS MAY INCREASE CHANCES OF STOMACH CANCER.

DUST INHALATION:

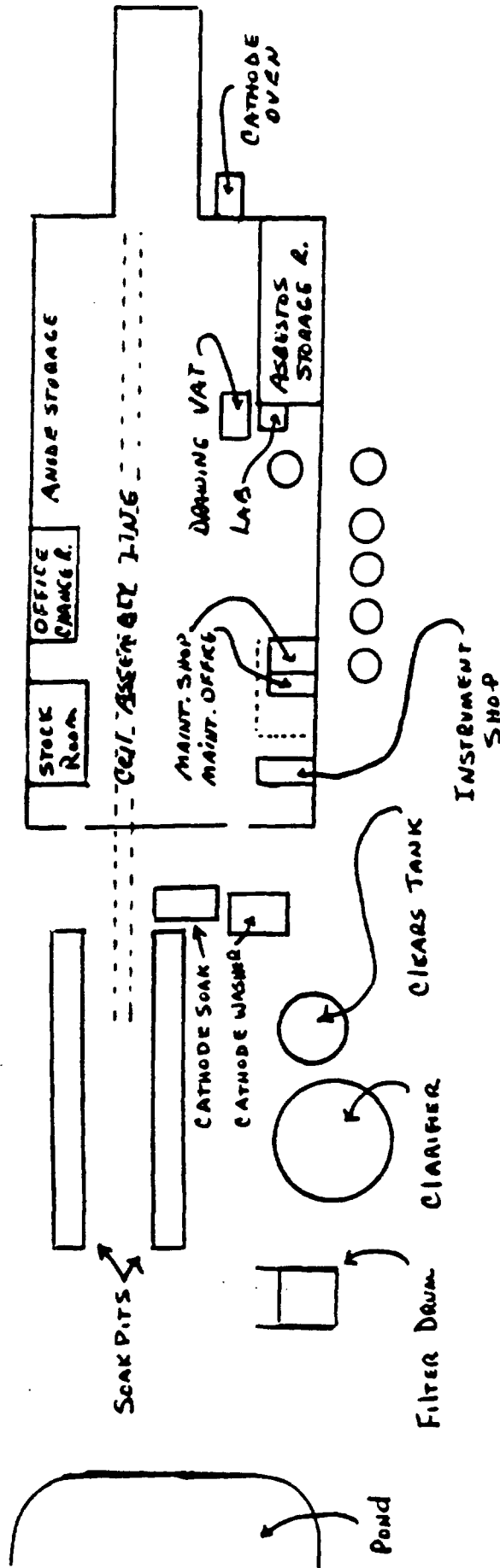
SHORT TERM: INHALATION OF HIGH CONCENTRATIONS OF THE DUST MAY CAUSE MODERATE DISCOMFORT. INHALATION OF MODERATELY HIGH CONCENTRATIONS MAY CAUSE NO DISCOMFORT.

LONG TERM: INHALATION OF THE ASBESTOS FIBERS IN CONJUNCTION WITH SMOKING HAS BEEN SHOWN TO INCREASE CHANCES OF LUNG CANCER BY ABOUT 90 TIMES THAT OF A PERSON WHO NEITHER SMOKES NOR WORKS WITH ASBESTOS. CAN ALSO CAUSE A SERIOUS LUNG DISEASE CALLED ASBESTOSIS. CAN ALSO CAUSE CANCER OF THE CHEST LINING.

COMMENTS: PROPER RESPIRATOR IS REQUIRED WHEN WORKING WITH ASBESTOS.

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Cell Service
Block 56



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