



DOW CHEMICAL U.S.A.

REV
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LOUISIANA DIVISION

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INDUSTRIAL HYGIENE REPORT

FIRST HALF OF 1983 BI-ANNUAL ASBESTOS SURVEY IN
THE CHLOR-ALKALI II, CELL SERVICE AND CHLORINE
PLANTS

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SUMMARY

The asbestos in air monitoring for first half of 1983 has been completed in the Chlor-Alkali II, Cell Service and Chlorine plants. Short term personnel and area excursion sampling was selected to depict peak concentrations of airborne asbestos. Survey results should be compared to the OSHA Permissible Exposure Limits (PEL) of two (2) fibers per cubic centimeter greater than five (5) microns for eight-hour time weight averages and a ceiling limit of ten (10) fibers per cubic centimeter greater than five (5) microns. Survey results in the Cell Service, Chlor Alkali II, and Chlorine plants were below the PEL of two (2) fibers per cubic centimeter greater than five (5) microns in length for an eight-hour time weighted average. The short term exposure sampling results were well within the PEL ceiling limit.

Good housekeeping, strict safe operating procedures, and a constant vigil for problem areas are the most important considerations for a successful abatement program. Employees must be informed of the survey results and must review the consequences of exposure to toxic amounts of asbestos fibers. (See attachment)

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Introduction

The required asbestos in air monitoring for the first half of 1983 has been completed. The survey serves to help protect the employees against over-exposure, pinpoint problem areas and fulfill the requirements of the Federal Occupational Safety and Health Act.

Discussion

In addition to everyday safety equipment, operators are required to wear disposable paper suits or work uniforms laundered on-site, rubber gloves and proper dust respirators when handling or working with friable asbestos. The safe procedure for handling asbestos should be discussed with each new employee before entering the work area and reviewed annually with the experienced operators as part of the ongoing Industrial Hygiene Education Program.

Sampling Method - Personnel samples are collected from the operators' breathing zone with a mixed cellulose ester membrane filter (37 mm diameter; 0.8 micron pore size) mounted on an open-face filter holder and attached to the operators' lapels. These cassettes are connected to monitoring pumps calibrated with a soap bubble meter to operate at a rate of 1.5 to 2.0 liters per minute.

Area samples are collected utilizing the same equipment and method as the personnel samples.

Analytical - The asbestos samples are analyzed using the NIOSH-Approved Method, P & CAM 239.

Results (See Attachment)

Monitoring results of thirty-six (36) samples indicated all samples were below the present exposure limit of 2 fibers > 5 microns in length per cubic centimeter for an eight-hour time weight average PEL.

Twenty-nine (29) personnel samples were collected from the operators' breathing zones. A high of 1.96 fibers per cc was recorded. The highest personnel breathing zone sample was a short term excursion sample of twenty minutes during pulping procedure on a series of cells. This short term excursion sample should be compared to PEL ceiling of ten (10) fibers per cc > five (5) microns in length.

The seven (7) area samples recorded a high of 0.18 fibers per cc in the Cell Service building outside of the sandblast room's southwest corner. This sample was for a period of 465 minutes and should be compared to the eight (8) hour time-weighted average PEL of two (2) fibers per cc > five (5) microns in length.

Recommendations

In anticipation of the lowering of the OSHA PEL (in all likelihood 0.5 fibers/cc >5 microns in length) eight (8) hour time-weighted average sampling should be reinstituted to determine compliance.

Conclusions

The monitoring results were satisfactory and below the established permissible exposure limit of two (2) fibers per cubic centimeter eight-hour time-weighted average and for short term excursion sampling below the ten (10) fiber per cubic centimeter ceiling. The hazardous nature of asbestos necessitates housekeeping and safe operating procedures remain the most important considerations for an abatement program. This must be a daily, job-by-job program to be successful and to offer the greatest protection to the employee.

The Chlor-Alkali II, Cell Service and Chlorine plants employees must be informed of this survey's results and the consequences of exposure to toxic amounts of asbestos reviewed. (See Attachment.)

TC:sb

CHLORINE BLOCK

ATTACHMENT

<u>DATE</u>	<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DURATION (MIN.)</u>	<u>VOLUME (L.)</u>	<u>FIBERS/CC >5 MICRONS IN LENGTH</u>
5/25/83	3709	*Personnel - SOT - Filled Pulp Wagon and Pulping Series	265	530.00	<0.10
5/26/83	3708	*Personnel - SOT - Pulping Series	45	90.00	<0.30
6/1/83	3659	*Personnel - SOT - Pulping Series	120	240.00	<0.10
6/1/83	3660	*Personnel - SOT - Pulping Series	120	240.00	<0.10
6/8/83	3707	*Personnel - SOT - Pulping Series	45	90.00	<0.30
6/8/83	3663	*Personnel -SOT - Pulping Series	30	60.00	<0.40
6/9/83	3662	*Personnel - SOT - Fitted Pulp Trailer - and Pulping Series	45	90.00	<0.30
6/16/83	3656	*Personnel - SOT - Pulping Series	60	111.00	<0.30
6/16/83	3657	*Personnel - SOT - Pulping Series	60	120.00	<0.20
6/16/83	3661	*Personnel - SOT - Pulping Series	13	26.00	1.36

*RESPIRATORY PROTECTION WORN

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CELL SERVICE BLOCK

ATTACHMENT

<u>DATE</u>	<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DURATION (MIN.)</u>	<u>VOLUME (L.)</u>	<u>FIBERS/CC >5 MICRONS IN LENGTH</u>
6/9/83	1366	Area - Cathode Oven Control Panel	385	635.25	<0.1
6/9/83	1380	Area - Over Lab Oven	334	668.00	<0.1
6/13/83	669	Personnel - OS - Training on Cathode Line	490	980.00	<0.1
6/14/83	676	*Personnel - Laborer - Anode Building and Brushing Copper Contacts	255	510.00	0.16
6/14/83	677	Personnel - Laborer - Installing Cathodes in Cells with Anodes	220	440.00	<0.1
6/15/83	678	Personnel - OS - Operation of Cathode Drawing Vat	397	794.00	<0.1
6/16/83	679	Personnel - Laborer - Installing Cathodes and Brushing Copper Contacts	155	317.50	<0.1
6/16/83	680	Area - Cathode Oven Control Panel	372	911.40	<0.1

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CELL SERVICE BLOCK
(Continued)

ATTACHMENT

<u>DATE</u>	<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DURATION (MIN.)</u>	<u>VOLUME (L.)</u>	<u>FIBERS/CC >5 MICRONS IN LENGTH</u>
6/16/83	681	*Personnel - Laborer - Installing Cathodes in Cells and Brushing Copper Contacts	200	400.00	<0.1
6/17/83	683	Area - Debugging Room	405	830.25	<0.1
6/20/83	684	Area - Debugging Room	473	969.65	<0.1
6/20/83	685	Area - Center of Building by S.W. Corner of Sandblast Room	465	976.50	0.18
6/22/83	686	Personnel - OS - Routine Operation of Cathode Drawing Vat	470	869.50	<0.1
6/22/83	687	Area - Over Lab Oven	470	987.00	<0.1
6/23/83	688	Area - Cathode Oven Control Panel	365	730.00	0.13
6/23/83	689	Personnel - SOT - Routine Operation of Anode Line	375	675.00	<0.1
6/30/83	691	Personnel - Laborer - Working on Cathodes at the Drawing Vat	465	930.00	<0.1

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CA II BLOCK

ATTACHMENT

<u>DATE</u>	<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DURATION (MIN.)</u>	<u>VOLUME (L.)</u>	<u>FIBERS/CC >5 MICRONS IN LENGTH</u>
6/24/83	3084	*Personnel - OTT - Pulping Series	55	95.00	<0.3
6/24/83	3083	*Personnel - OTT - Filled Pulp wagon and Pulping Series	130	221.00	<0.1
6/27/83	3082	*Personnel - OT - Pulping Series	55	93.50	0.28
6/27/83	3078	*Personnel - OTT - Pulping Series	29	49.30	1.03
6/27/83	3079	*Personnel - SOT - Pulping Series	20	34.00	1.96
6/27/83	3080	*Personnel - SOT - Pulping Series	45	76.50	<0.3
6/29/83	3081	*Personnel - OTT - Pulping Series	82	139.40	<0.2
6/29/83	3076	*Personnel - OT - Pulping Series	30	51.00	<0.5
6/29/83	3077	*Personnel - OT - Pulping Series	30	51.00	<0.5

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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

COMPOUND: ASBESTOS

EYES: CONTACT WITH THE DUST CAN CAUSE MECHANICAL IRRITATION
SIMILAR TO THAT CAUSED BY ANY SOLID PARTICLE.

SKIN: UNLIKE FIBROUS GLASS, THE FIBERS DO NOT CAUSE DISCOMFORT
OR MECHANICAL IRRITATION.

INGESTION: SOME EVIDENCE SUGGESTS THAT LONG TERM INGESTION OF
ASBESTOS MAY INCREASE CHANCES OF STOMACH CANCER.

DUST INHALATION: SHORT TERM: HIGH CONCENTRATIONS (WELL ABOVE ACCEPTABLE
LEVELS) MAY CAUSE ONLY MODERATE DISCOMFORT FROM
MECHANICAL IRRITATION.

LONG TERM: THE FIBERS CAN CAUSE SCARRING OF THE
LUNGS (ASBESTOSIS). A CANCER OF THE CHEST LINING
(MESOTHELIOMA) MAY ALSO RESULT FROM ASBESTOS EXPOSURE.
MOST IMPORTANT, ASBESTOS EXPOSURE AND CIGARETTE
SMOKING GREATLY INCREASE THE RISK OF LUNG CANCER.

IHG: ACGIH TLV IS 2 FIBERS/CC

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