

INDUSTRIAL HYGIENE REPORT

ASBESTOS SURVEY CELL SERVICE BLOCK 56
LOUISIANA DIVISION

CRI NO. _____

FILE NO. LAD-IH-79.02DATE April 30, 1979AUTHOR Dannie KennedyCHECKED Charles E. HelgesonDATE 5-2-79

SUMMARY

The asbestos in air monitoring for 1978 has been completed in the Cell Service block. Survey results were satisfactory and well below the acceptable threshold limit value of 2 fibers per cubic centimeter greater than five (5) microns in length.

The highest exposure recorded was 0.10 fibers per cc of air; there were 21 samples recording less than 0.01 fibers per cc. Due to the low results obtained in routine time-weighted sampling, it is recommended that short duration excursion sampling be emphasized in future surveys.

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 over-exposure to asbestos fibers. (See attachment 2.)

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INTRODUCTION

The required asbestos in air monitoring for 1978 has been completed. The survey serves to 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, rubber gloves and proper dust respirators when handling or working with asbestos. The safe procedures 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.

EXPERIMENTAL

Sampling Method

Personnel samples are collected from the operators' breathing zone with a millipore 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

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 15 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 0.6g 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 using the Nomarski interference contrast. All fibers over 5 microns in length with a 3:1 length to width ratio are counted as fibers (only one of the four squares is selected for a fiber count.)

After the square-grid is selected to be counted, 12 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.

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$$\text{Fibers/cc} = \frac{\text{fiber count (} > 5 \text{ microns in length) x sizing factor (92) for filter}}{\text{cc's of air (sampling time in minutes x flow rate of pump)}}$$

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 of 29 samples indicate all samples were well below the present TLV of 2 fibers $> 5 \mu$ in length per cubic centimeter. Highest recorded sample was 0.10 fibers per cc, while 21 samples were less than 0.01 fibers per cc. (Results were rounded off to the nearest hundredth.)

Eleven (11) personnel samples were collected from the operators' breathing zones. A high of 0.05 fibers per cc was recorded, five samples showed 0.01 fibers, and six samples recorded < 0.01 fibers per cubic centimeter.

The eighteen (18) stationary samples recorded a high of 0.10 fibers per cc in the drawing area near the raker on D 513. Two samples recorded 0.01 fibers per cc and the remainder were less than 0.01 fibers per cc.

RECOMMENDATIONS

Short-term excursion sampling is recommended in future sampling to better determine if problems exist in some jobs.

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 to offer the greatest protection to the employee.

The Cell Service employees must be informed of this survey's results and the consequences of over-exposure reviewed. (See Attachment 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>Calibrated Flow Rate (cc/min.)</u>	<u>Fibers/cc >5μ in Length</u>
78-01	2-8-78	Area sampler placed in Ramsay - Scarlett warehouse on top of African Blue asbestos sacks at east door from 08:40 to 15:40	420	1750	0.01
78-02	2-8-78	Area sampler placed in Ramsay - Scarlett warehouse on top of African Blue asbestos pallet adjacent to aisle way from 08:40 to 15:40	420	1500	< 0.01
78-03	2-8-78	Area sampler located in Ramsay - Scarlett warehouse between pallets of Hooker # 1 and # 2 adjacent to aisle from 08:45 to 15:40	415	1750	< 0.01
78-04	2-8-78	Area sampler located in Ramsay - Scarlett on pallet of African Blue at aisle from 08:47 to 15:40	413	1850	< 0.01
78-05	2-9-78	O.T.T. operator working at drawing system - Hooking up cathodes and performing miscellaneous job duties at drawing system from 06:00 to 12:00	360	1750	< 0.01
78-06	2-9-78	O.S. operator working at drawing system - General duties include working from settling pond to GT 501 A & D (near drawing vat) making daily rounds, miscellaneous maintenance and operations.	360	1900	< 0.01

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Attachment 1 (Cont.)

MONITORING RESULTS

<u>Sample Number</u>	<u>Date</u>	<u>Job Classification and Description</u>	<u>Sampling Time (minutes)</u>	<u>Calibrated Flow Rate (cc/min.)</u>	<u>Fibers/cc >5μ in Length</u>
78-07	2-9-78	S.O.T. Operator working drawing system operating control panel and running asbestos samples in lab from 06:00 to 12:00	360	1900	< 0.01
78-08	2-16-78	O.T.T. Operator working as hook-up man at drawing system from 07:45 to 13:45	360	1800	0.01
78-09	2-16-78	S.O.T. Operator running control board at drawing system from 07:45 to 13:10	325	1900	0.01
78-10	2-16-78	O.S. Operator working as hook-up man at drawing system from 07:45 to 13:30	345	1900	< 0.01
78-11	2-16-78	Area sampler located under CV550 (conveyor belt at loading point in asbestos storage room. Sampled from 07:45 to 14:25	400	1800	< 0.01
78-12	2-21-78	Area sampler located on northeast corner of Station #29. Laborer was shaping and brushing copper on dropped-in cathodes. Monitored from 07:20 to 14:32	432	1800	< 0.01
78-13	2-21-78	Area sampler located on southwest corner of station #29. Laborer was shaping and brushing copper on dropped-in cathodes. Monitored from 07:21 to 14:32.	432	1800	< 0.01
78-14	2-23-78	O.S. Operator working on anode line-dropping in bonded cathodes and completing finish work on cells. Monitored from 06:51 to 13:33	402	1900	< 0.01

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Attachment 1 (Cont.)

MONITORING RESULTS

<u>Sample Number</u>	<u>Date</u>	<u>Job Classification and Description</u>	<u>Sampling Time (minutes)</u>	<u>Calibrated Flow Rate (cc/min)</u>	<u>Fibers/cc >5μ in Length</u>
78-15	2-23-78	Laborer - Laborer working on anode line dropping in bonded cathodes and doing finishing work. Monitored from 06:52 to 13:28	396	1750	< 0.01
78-16	2-23-78	Laborer - Laborer dropping in bonded cathodes and doing finishing work (with Derakane) Monitored from 06:53 to 13:29	396	1900	< 0.01
78-17	2-23-78	Area sampler located on Station #28 by Start and Stop control. Cathodes are dropped in at this station. Monitored from 07:03 to 13:36	393	1700	< 0.01
78-18A	4-19-78	Area sampler located in Ramsay-Scarlett warehouse by east door. Monitored from 09:20 to 15:15	355	1850	< 0.01
78-18	5-24-78	O.T. Operator working hook-up job at drawing system. Monitored from 06:32 to 13:00	388	1850	0.05
78-19A	4-19-78	Area sampler located in Ramsay Scarlett warehouse in NE corner of building in aisleway. Monitored from 09:20 to 15:15	355	1800	< 0.01
78.19	5-24-78	S.O.T. Operator working at drawing system hooking up cathodes. Monitored from 06:34 to 14:09	455	1850	< 0.01

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Attachment 1 (Cont.)

MONITORING RESULTS

Sample Number	Date	Job Classification and Description	Sampling Time (minutes)	Calibrated Flow Rate (cc/min)	Fibers/cc >5 μ in Length
78-20A	4-19-78	Area sampler located in Ramsay Scarlett warehouse on SW aisle from 09:20 to 15:15	355	1800	< 0.01
78-20	5-24-78	Area sampler located on D-513 raker mechanism mounted by motor base from 06:35 to 14:13	458	1800	< 0.10
Five stationary samples were collected in the area between the filter drum and the northwest corner of building 5601 (the asbestos recovery system area) to determine if any problems exist with asbestos drying out and emitting airborne fibers. (Sampling requested by Ed Edwards)					
EE 1	9-19-78	Stationary sampler located at base of stairs by "I" beam next to scrap hopper collecting asbestos wash for landfill from 08:35 to 12:35.	240	1700 cc/min	< 0.01
EE 2	9-19-78	Stationary sampler located upstairs by revolving drum which collects asbestos waste. From 08:37 to 12:37.	240	1700 cc/min	< 0.01
EE 3	9-19-78	Stationary sampler located downwind of asbestos recovery drums by D 504 (~20 feet) from 08:40 to 12:40	240	1650 cc/min	< 0.01
EE 4	9-19-78	Stationary sampler located downwind of cathode storage area outside on west side of building. From 08:44 to 12:44.	240	1600 cc/min	< 0.01
EE 5	9-19-78	Stationary sampler located on northwest corner of building downwind of cathodes wash area. Cathodes were being washed during sampling period 08:48 to 12:48.	240	1600 cc/min	< 0.01

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CONSEQUENCES OF OVEREXPOSURE

COMPOUND: ASBESTOS

EXPOSURE LIMIT: 2 FIBERS/CC, <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 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.

BSHorvath
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