PLAINTIFF'S EXHIBIT

UC-4930

AIRBORNE ASBESTOS COUNTS

for

Union Carbide Corporation
Building No. 88
Niagara Falls, New York

Date Sampled:	April 11, 1979
Date Reported:	August 13, 1979

Samples Collected By:	W. R. Pioli Union Carbide Corporation
Samples Analyzed By:	B. L. Ingalls Union Carbide Corporation
Reported By:	F. L. Smith, Jr. Union Carbide Corporation

Union Carbide Corporation
Metals Division
Niagara Falls, New York

X409142

OBJECTIVE

Airborne monitoring for asbestos emissions during the wearing of asbestos furnace coats and leggings in No. 88 Building at Union Carbide Corporation, Metals Division, Niagara Falls, New York.

OPERATION DESCRIPTION

The airborne sampling tests were conducted during normal furnace operations in No. 88 Building. Monitoring encompassed the major part of an eight-hour work shift including both personal and area esposure.

Personal samples were obtained on two workmen in the building in continuous sequence for a period of approximately six and one-half hours. Richard Alvarez (craneman) and Tom Walker (chillman) were monitored during this period in the course of a normal workday. The test results on these two gentlemen are represented separately and TWA value calculated for each.

One area sample was obtained approximately 24 feet north and 6 feet above the floor of No. 71 Furnace. A TWA value was also calculated for emissions at this location.

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SAMPLE EQUIPMENT AND TEST PROCEDURES

Sampling and dust counting were carried out in accordance with OSHA Regulation 1910.1001, using the Bayer, Zumwalde and Brown method for counting asbestos fibers by phase contrast microscopy (Bureau of Occupational Safety and Health, Feb. 1969).

Battery-powered air pumps (M.S.A. type), calibrated to 2 liters per minute, were used to collect personal breathing zone and environmental samples on Millipore membrane filters of 0.8 micron porosity.

Fiber counting was performed on a Nikon phase contrast microscope at 400X utilizing a Porton reticle for sizing and field definition.

Two results have been reported for each sample - they are:

1. Chrysotile Asbestos - Any fiber having an aspect ratio ≥3 and a length ≥5μ that is in the operator's judgement chrysotile. In the event of doubt and in the absence of further information, any fiber having the above physical dimensions will also be counted as chrysotile.

2. Possible Amphibole Asbestos - Any fiber having an aspect ratio ≥3 and a length ≥5μ that is not obvious to be material other than asbestos. This includes all amphiboles and material similar in appearance.

COMMENTS

The OSHA regulations permit a maximum limit of 2 fibers greater than 5 microns in length per cubic centimeter of air sampled on an 8-hour, time-weighted average (TWA). The formula $\frac{C_1T_1 + C_2T_2 + C_nT_n}{\Sigma T}$ describes the TWA

where C = fiber count in fibers/cc and T = time.

The regulations also stipulate a ceiling concentration of 10 fibers/cc greater than 5 microns which is not to be exceeded at any time.

The preparation and mounting of microscope slides was done using the acetone-triacetin method.

TEST RESULTS

The details of sample collection and resultant fiber counts are listed in the attached table(s).

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SUMMARY OF FIBER COUNTS

Sample No.	Air Sample Time	Minutes	Operation Description	Airborne Fiber Count (fibers/cc >5μ) Chrysotile Asbestos	Possible Amphibole Asbestos
P-32	8:55 - 10:01	66	Personal - (Richard Alvarez) craneman. Before tap No. 1 and moving chills to scale.	0.3	0.1
P-42	10:02 - 10:34	32	Personal - (R. Alvarez) adding mix to furnace before tap No. 1.	0.2	0.1
M-19	10:48 - 11:50	62	Personal - (R. Alvarez) after tap No. 1, moving chills and feeding mix to furnace.	0.3	0.1
S-40	11:51 - 1:38	107	Personal - (R. Alvarez) feeding furnace mix, moving wood chips and lunch break. Also wearing furnace coat while tapping and lancing tap hole. Tap No. 2 included.	0.3	>0.1
H-40	1:40 - 2:45	65	Personal - (R. Alvarez) moving chills and feeding furnace mix.	0.3	0.0
P-20	2:45 - 3:45	60	Personal - (R. Alvarez) operating crane, feeding mix to furnace and moving chills.	0.1	0.1

$$\text{TWA Chrysotile} = \frac{(19.8)+(6.4)+(18.6)+(32.1)+(19.5)+(6)}{392} = \frac{102.4}{392} = 0.26$$

$$\text{TWA Amphibole} = \frac{(6.6)+(3.2)+(6.2)+(10.7)+(6)}{392} = \frac{32.7}{392} = 0.08$$

P-13	8:50 - 10:00	70	Personal - (Tom Walker) chillman. Before tap No. 1, preparing and moving chills.	0.2	0.1
P-45	10:01 - 10:27	26	Personal (T. Walker) adding mix to furnace before tap No. 1.	0.3	0.1
0-21	10:28 - 10:45	17	Personal - (T. Walker) during tap No. 1 with asbestos coat and leggings. Normal procedure.	1.2	0.0
M-15	10:47 - 11:52	65	Personal - (T. Walker) after tap No. 1 moving and preparing chills.	0.1	0.0
P-33	11:53 - 1:40	107	Personal - (T. Walker) preparing chills, sweeping floor and lunch break. Also work coats and tapped and lanced furnace, tap No. 2 included.	0.1	0.0
P-3	1:41 - 2:50	69	Personal - (T. Walker) preparing chills and sweeping floor.	0.2	0.0

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SUMMARY OF FIBER COUNTS

Sample No.	Air Sample Time	Minutes	Operation Description	Airborne Fiber Count (fibers/cc >5μ) Chrysotile Asbestos	Possible Amphibole Asbestos
O-29	2:50 - 3:45	55	Personal - (T. Walker) preparing chills and floor cleaning.	>0.1	>0.1
	TWA Chrysotile = $\frac{(14)+(7.8)+(20.4)+(6.5)+(10.7)+(13.8)+(5.5)}{409} = \frac{78.7}{409} = 0.19$				
	TWA Amphibole = $\frac{(7)+(2.6)+(5.5)}{409} = \frac{15.1}{409} = 0.04$				
M-42	9:03 - 10:06	63	Area - desk, ∿24' north of No. 71 furnace and ∿6' above ground. Prior to handling of asbestos.	>0.1	>0.1
B-93	10:08 - 12:00	112	Area - desk, north of No. 71 furnace, prior to tap. No asbestos handled as yet.	0.1	0.0
P-38	12:03 - 1:45	102	Area - desk, north of No. 71 furnace, normal furnace operations.	0.1	0.1
P-41	1:46 - 2:40	54	Area - desk, north of No. 71 furnace, normal furnace operations.	0.1	0.0
O-11	2:40 - 3:32	52	Area - desk, north of No. 71 furnace, normal furnace operations.	0.1	>0.1
	TWA Chrysotile = $\frac{(6.3)+(11.2)+(10.2)+(5.4)+(5.2)}{383} = \frac{38.3}{383} = 0.1$				
	TWA Amphibole = $\frac{(6.3)+(10.2)+(5.2)}{383} = \frac{21.7}{383} = 0.6$				

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