

PB81239741

RESULTS OF U.S.P.H.S. SURVEY

RAYBESTOS-MANHATTAN
Asbestos Textile Plant
Charleston, South Carolina

Report Prepared By:

David S. Sundin

December, 1972

Memorandum

National Institute for Occupational Safety and Health

TO : Chief, Industrial Hygiene Services Branch

DATE: December 14, 1972

FROM : Assistant Sanitary Engineer, IHSB

SUBJECT: Industrial Hygiene Survey of Raybestos-Manhattan Asbestos Textile Plant, Charleston, South Carolina

An industrial hygiene survey for airborne asbestos was conducted at the Raybestos-Manhattan Asbestos Textile Plant in Charleston, South Carolina during the period May 23-26, 1972. The Industrial Hygiene Services Branch of the National Institute for Occupational Safety and Health surveyed the plant to provide an opportunity for South Carolina Board of Health personnel to observe field sampling techniques. The filter cassettes and sampling sheets were sent to the office of the South Carolina State Board of Health with the understanding that additional NIOSH personnel would train them in fiber counting methodology at a later date.

In September the cassettes and sampling sheets were received from the South Carolina State Board of Health. A wedge of filter material had been removed from each of the filters, presumably for retention until such time as South Carolina occupational health staff members completed training in fiber counting techniques. The cassettes and filter segments were forwarded by NIOSH to the Western Area Occupational Health Laboratory in Salt Lake City for fiber counting. The attached listing reports the concentrations of fibers greater than five microns in length at each of the sampling locations. The table is subdivided into the various areas surveyed, and presents an average fiber concentration for each operation.

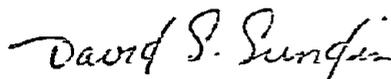
Atmospheric samples for fiber count were collected on membrane filters, Type AA, encased in a three-piece plastic field monitor with face cap removed and filter completely exposed. The samples were taken at the operator's breathing zone using a battery powered Mine Safety Appliance (MSA) gravimetric pump, Type G. The pump and samplers were worn by the employees. The sampling time for each sample was approximately one hour at a flow rate of 1.7 liters per minute (lpm).

The U. S. Department of Labor standard for airborne asbestos dust is 5 fibers per cubic centimeter (cc) of air based on a count of fibers greater than 5 micrometers ($> 5\mu\text{m}$) in length (determined by the membrane filter method at 400-450X magnification, phase contrast illumination). The count is determined as a time-weighted average (TWA) exposure for an 8-hour work day. No peak concentration of asbestos to which workers are exposed shall exceed 10.0/cc $> 5\mu\text{m}$ as determined by a sampling time of fifteen minutes.

The data show that there are several areas of the plant that exceed the standard. The carding area shows an average of 10.2 fibers/ml with a low of 2.2 and a high of 26.2 fibers/cc. The Foster Winder has an average concentration of 10.7 fibers per ml with a low of 6.3 fibers to a high of 18.9 fibers/ml. Other areas that exceeded the standard were the Blender Operation, Ring Spinner, Mule Spinner, and Spooler.

The investigatory survey was limited to the sampling of airborne asbestos since it had been planned as an instructional effort between NIOSH and the South Carolina State Board of Health. No attempt was made, therefore, to assess the total plant environment in a comprehensive industrial hygiene survey.

Plant personnel at Raybestos-Manhattan appeared to be aware of the high concentrations of asbestos fibers at the workplace and provided respirators for the use of employees. There was an on-going effort to lower the fiber counts in the air by means of improved local exhaust designs and wet processes for handling the fibrous product.


David S. Sundin

USPHS SURVEY

RAYBESTOS-MANIATTAN ASBESTOS TEXTILE PLANT
 CHARLESTON, SOUTH CAROLINA
 May 1972

Personal Samples

Operation	Sample No.	Concentration Fibers/cc, greater than 5µ
<u>Fiber Preparation</u>		
Blender Operator	2	2.3
" "	3	5.0
" "	22	6.8
" "	35	5.7
" "	36	1.3
" "	40	4.9
" "	86	11.2
" "	87	7.8
" "	89	3.4
" "	105	2.8
" "	106	4.0
" "	116	3.2
" "	117	4.5
" "	126	9.3
		Avg. 5.2
Fly Machine Operator	127	1.4
W-3 Machine Operator	125	11.7
<u>Carding</u>		
Card Tender	1	5.2
" "	10	10.2
" "	16	7.1
" "	37	8.3
" "	47	12.1
" "	60	26.2
" "	61	11.8
" "	62	6.5
" "	63	10.5

Personal Samples

Carding (Cont'd)

Card Tender	65	10.9
" "	66	16.8
" "	67	5.4
" "	68	6.5
" "	146	4.3
" "	147	11.2
" "	148	16.0
" "	154	invalid
" "	155	2.2
		Avg. 10.2
Clean-Up, Carding	64	22.3

Spinning

Ring Spinner	14	1.8
" "	15	1.5
" "	18	4.6
" "	19	2.6
" "	23	14.7
" "	33	10.4
" "	34	16.6*
" "	38	9.2
" "	41	5.9
" "	42	8.2
" "	43	6.7
" "	45	5.7
" "	52	5.0
" "	53	4.4
" "	54	5.7
" "	55	7.8
" "	57	8.1
" "	145	6.5
" "	150	4.9
" "	164	6.7
		Avg. 6.9
Mule Spinner	9	3.6
" "	17	6.1
" "	49	8.9

*pump failed

Personal Samples

Spinning (Cont'd)

Mule Spinner	50	8.0
" "	51	6.9
" "	56	4.7
" "	59	12.5
" "	76	8.7
" "	77	11.2
" "	78	6.8
" "	79	6.2
" "	81	10.5
" "	143	6.3
" "	149	7.7

Avg. 7.0

Doffer	8	4.5
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Overall Avg. 7.2

Twisting

Twister	13	10.4
"	20	11.7
"	30	4.6
"	72	3.9
"	73	not counted
"	75	5.6
"	153	12.0
"	157	8.1

Avg. 8.0

Slubber	166	3.9
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Winding

Winder	7	2.0
"	12	3.8
"	25	2.3
"	28	1.1
"	29	2.9
"	31	1.9

Personal Samples

Winding (Cont'd)

Winder	48	1.8
"	69	9.8
"	71	2.8
"	141	0.9
"	156	4.0
"	158	1.6
"	911	3.7

Avg. 3.0

Foster Winder	80	10.9
" "	82	6.3
" "	83	11.3
" "	84	7.6
" "	85	10.2
" "	113	8.6
" "	115	18.9
" "	119	12.5
" "	120	11.8
" "	129	9.2

Avg. 10.7

Spooler	5	12.8
"	32	4.8
"	44	2.4

Avg. 6.7

Overall Avg. 6.4

Rope, Wick, Braid & Cord

Braider	24	2.2
"	95	2.3
"	96	1.1
"	99	1.2
"	102	1.0
"	109	2.9
"	130	4.6

Avg. 2.2

Personal Samples

Rope, Wick, Braid & Cord (Cont'd)

Cord & Filler	136	0.4
" "	137	0.5
" "	138	0.8
" "	139	0.2
" "	140	0.8
		Avg. 0.5

Weaving

Cloth Weaver	11	4.8
" "	21	9.6
" "	46	1.2
" "	88	2.2
" "	90	2.4
" "	91	4.5
" "	93	1.3
" "	94	2.5
" "	97	4.7
" "	98	6.3
" "	101	4.5
" "	103	4.6
" "	104	12.6
" "	107	6.3
" "	108	6.8
" "	110	1.7
" "	151	4.0
" "	160	6.2
" "	912	4.5
		Avg. 4.8

Draper Weaver	4	1.5
" "	6	0.7
" "	26	0.6
" "	27	1.1
" "	111	1.4
" "	112	2.8
" "	114	3.2
" "	121	4.0
" "	144	1.3

Personal Samples

Weaving (Cont'd)

Draper Weaver	161	4.2
" "	162	1.9
" "	168	2.2
		Avg. 2.1
Tape Weaver	131	3.6
" "	132	17.2
" "	133	8.2
" "	134	8.8
" "	135	4.8
		Avg. 8.5
Cop Winder	123	1.3
" "	128	0.8
" "	142	0.9
Inspector	92	0.8
"	122	2.5
Creel Operator	39	2.5
Beamer Operator	100	8.0
Cloth Winder	118	13.0
" "	124	3.3
Clean-Up, Weaving Area	152	7.3
Tie Operator	159	4.0
Pad Machine Operator	70	3.3

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16. Abstract (Limit: 200 words) Personal air sampling for asbestos (1332214) was conducted by the United States Public Health Service at the Raybestos-Manhattan Company's Asbestos Textile Company (SIC-3292) in Charleston, South Carolina, during May, 1972. General area samples contained 0.2 to 26.2 fibers greater than 5 micrometers in length per cubic centimeter (f/cc). Several areas of the facility has samples that exceeded the United States Department of Labor standard for airborne asbestos dust of 5f/cc. Carding area has an average asbestos concentration of 10.2 fibers per milliliter (f/ml), while the average concentration near the foster winder operation was 10f/ml. Other areas that exceeded the exposure standard were the blender operation, ring spinner, mule spinner, and spooler.			
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