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September 3, 1964

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Mr. T. S. Sadler, Superintendent
H. K. Porter Company, Davidson Works
Davidson, North Carolina

Dear Mr. Sadler:

In our early discussions about the asbestos dust study being conducted jointly by the Public Health Service and the State Board of Health, we agreed to furnish the results of the air sampling made during the engineering phase. I am enclosing a copy of these results as received from Mr. Howard Ayer who directed the engineering study.

You will notice that both midget impinger and millipore filter results are shown. The impinger counts were made with the same equipment and procedures that this Section has throughout the years. The millipore filter procedure has not been used by this Section and represents a new approach for evaluating asbestos dust exposures. To make these sampling results more meaningful to you, I am including an excerpt from a letter from Mr. Ayer:

"As you know, a major part of our survey was done with membrane filters. For these filters, counts are reported for total fibers and for fibers longer than 10 μ . These counts were made on Millipore Type AA filters rendered transparent by a mixture of 50% diethyl oxylate and 50% dimethyl phthalate. The counts were made using a 4 mm (43X) objective with phase contrast illumination. Where fiber counts are shown on the same line with an impinger count, these represent simultaneous, adjacent samples by the two methods. Most other membrane filter samples at particular operations were taken by personal samplers worn for periods of 1-2 hours by the individual operator. General air samples were taken by a sequential sampler or in an array of an elutriated and an unelutriated membrane filter, an elutriated midget impinger and an unelutriated midget impinger. The elutriated samples, which used a horizontal elutriator of the British National Coal Board Design ahead of the sampler, were merely to develop information as to relative "respirability," etc., and are not reported here.



Mr. Sadler
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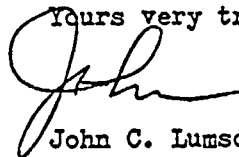
There are no official limits established in this country for asbestos fiber counts. As with dust counting, the count obtained depends upon the sampling and counting methods. We have compared impinger counts with companion membrane filter sample counts, and while there are differences between operations and between similar operations in different plants, it appears from samples taken so far that fiber counts by the previously described method are equivalent to impinger counts of 5 mppcf as follows:

Total fibers -- 50/cc
Fibers longer than 5 μ -- 30/cc
Fibers longer than 10 μ -- 15/cc

It should be emphasized that these numbers are averages, based on a limited number of samples in four plants. They are included only to give some significance to the large number of fiber counts reported. The fiber counts are a much more direct measure of the asbestos fiber exposure than the impinger dust count, and it might be prudent to suggest additional controls when the above concentrations are exceeded even if the impinger counts are within the 5 mppcf."

If you have any questions at all about the enclosed data, do not hesitate to let us know. Someone will be glad to discuss the results with you.

Yours very truly,



John C. Lumsden
Chief Industrial Hygiene Engineer
Occupational Health Section

JCL:fms

Enclosure

cc: Dr. W. L. Wilson, Chief
Occupational Health Section

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Results of Air Samples of March-April 1964
Davidson Works, H.K. Porter Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total Fibers/cc	10 µ
Fiber Preparation					
1 Blender Operation-BZ	12	1.4	11A	10.3	2.3
	401	7.2	402	122.1	30.5
	403	1.1	404	57.6	0.7
2 Stock Packer--Person.			200	7.3	1.5
			201	15.6	4.0
			202	12.2	3.9
			411	23.7	6.4
			426	12.3	2.2
3 General Air--BZ	109	0.9	110	3.7	1.0
Carding					
Fixer - BZ	427	5.9	428	32.4	3.4
	432	4.0	433	23.1	5.6
4 Operator - BZ	14	2.2	13	21.2	7.6
	30	5.1	29	21.6	5.6
	405	2.5	406	18.6	6.5
	407	1.8	408	10.3	2.8
	409	0.9	410	12.3	3.9
			101	7.7	4.1
Person.			203	10.6	2.8
			204	24.2	7.7
			413	18.9	4.3
			424	16.2	4.3
5 Roving Hauler - BZ	420	2.8	419	50.1	15.2
	421	2.5	422	20.8	13.4
Person.			425	25.9	10.1
6 General Air	21	2.2	15	22.4	4.0
			16	29.4	14.2
	22	2.2	17	9.8	3.3
	23	2.2	18	8.2	3.6
	24	0.3	19	12.2	0.6

NOTES ON ABBREVIATIONS

"Person." refers to personal samples on membrane filters

"BZ" refers to breathing zone samples by companion impinger & membrane filter

Davidson Works, H.K. Porter Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total Fibers/cc	10 µt
Carding (continued)					
General Air (cont.)	25	1.0	20	6.9	1.2
	26	1.0			
	205	3.1	208	28.4	8.1
Spinning					
7 Spinner Ring--EZ	9	6.2	8	35.2	8.8
	11	1.0	10	20.1	4.5
			32	31.6	11.7
			31	32.4	12.5
	221	3.4	222	25.4	6.0
	414	4.0	415	19.9	3.0
	416	3.7	417	11.9	7.1
			412	23.8	11.5
Person.					
8 Gen. Air	134	0.2			
			135	0.2	0.1
Yarn Weigher--Person.					
9			219	3.2	2.6
Doffer - Person.					
10			218	8.0	2.3
Twisting					
11 Twister - EZ	5	4.2	4	17.6	9.2
	7	3.1	6	13.4	7.3
	216	11.0	214	45.4	10.6
	224		223	7.5	3.6
	434	4.0	435	21.4	4.5
	436	5.1	437	7.7	1.8
	438	1.7	439	10.1	2.0
	440	2.8	441	19.5	7.6
			102	6.3	1.7
			106	16.1	6.0
			210	12.6	2.3
			213	14.6	3.5
Person.					
			215	14.1	4.0
			423	16.9	9.0
			429	0.5	0.0

Davidson Works, H.K. Porter Company

Operation	Limping		Membrane Filter		
	Sample #	mppcf	Sample #	Fibers/cc	
				Total	10 μ +
Twisting (continued)					
Doffer - Person.			211	10.9	3.5
13 General Air	113	2.0	115	56.5	25.2
	123	1.9	125	23.5	4.7
	127	0.9	129	2.9	0.6
	131	0.4	132	7.6	2.4
	116	0.8			
			117	10.3	2.5
	118	0.5	119	16.8	2.9
	120	0.9	121	11.3	1.5
Winding					
14 Winder (Spool)-EZ	430	1.5	431	4.4	1.6
			3	2.7	0.7
	28	2.4	27	19.9	9.1
			107	9.8	6.5
			212	-	-
Person.			217	4.5	0.7
Weaving					
15 Weaver Tape - EZ	103	0.0			
	195	0.6	194	4.2	2.2
	197	0.7	196	0.5	0.1
	199	0.1	198	0.4	-
	615	0.7	614	0.1	0.0
	702	0.5	701	0.5	0.5
			292	0.2	0.2
			293	2.7	0.6
Person.			295	3.2	1.8
16 Winder-Cop - EZ	617	0.5	616		
			294	2.6	1.6
Person.					

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Davidson Works, H.K. Porter Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total	Fibers/cc 10 μ +
Weaving (continued)					
16 Yarn Hauler - Person.			220	5.8	1.9
Gen. Air	104	0.6	105	5.7	1.4
	365	0.0	367	2.0	1.6
	361	0.2	363	3.4	2.1
Miscellaneous					
Janitor - BZ	36	2.8	35	44.1	22.1
	38	0.0	37	4.2	1.8
Parach.			34	25.1	9.6
			33	7.4	1.3

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