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E. I. DU PONT DE NEMOURS & COMPANY
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CC: G.J. Stopps, MD, Emp.Rel., Haskell Lab.
J.L. Parsons, Engineering, ESD
J. R. Allen, Engineering, ESD

ENGINEERING DEPARTMENT

DEFENDANT'S EXHIBIT
Kauper-38
AG 2-4-74

July 11, 1968

ADRIAN LINCH
MEDICAL SECTION
CHAMBERS WORKS

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DUST CONTROL PROGRAM

We are enclosing a copy of the results from the airborne dust sample made at Construction Division site locations during the month of June, 1968. Also included are the procedures used for the evaluation of airborne dust samples performed by Mr. Felix Stein and Dr. Morton Corn of the University of Pittsburgh, Graduate School of Public Health.

In evaluating the site locations whose quantitative analysis indicated particle counts in excess of 1 MP/CF, we found the primary cause to be drafts produced from open doors and windows. The provided exhaust systems were not functioning in full potential due to the drafts blowing the small particles away from pick-up point and making them airborne. Other producers of airborne particles were in the handling of calcium silicate block material from shipping carton through fabrication process. In isolated instances, hand saws contributed a percentage of the airborne particles.

The Old Hickory Construction Mono Spray sample dated 6/13/68 substantiates the need for improving spray applying equipment of asbestos fibrous materials. The 6/14/68 sample was taken of the employee opening Mono insulation material bags and changing spray machine.

We anticipate this information will be of interest to you and if we can be of any further service, please contact the writer.

CONSTRUCTION DIVISION

K. E. Keuper
Division Safety Supt.

KEK/dlm
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SUMMARY OF PARTICLE AND FIBER COUNT

FOR June, 1968 SAMPLES



Sample Number	Date	Location	Volume Sampled Ft^3	Particle Counts in MPPCF				Remarks
				Particles	Asbestos Fibers <5u	5u - 10u	>10u	
19	6-4-68	Waynesboro	19.6	3.0±0.1	0.26±0.03	0.10±0.02	0.054±0.014	Bright Field Particl Count = 0.22±0.02 MPPCF 10x objective
6	6-7-68	Luisville	19.0	0.280 ± 0.028	0.0082 ± 0.0047	0.0027 ± 0.0027	0.00	Resuspended
13	6-5-68	May Constr.	18.9	2.32±0.20	1.62±0.17	1.07±0.14	0.23±0.06	Resuspended
4	6-11-68	Kingston	17.77	0.517 ± 0.051	0.080 ± 0.02	0.0099 ± 0.0070	0.0099 ± 0.0070	
15	6-6-68	Memphis	18.41	3.95±0.15	0.16±0.03	0.054 ± 0.018	0.030 ± 0.013	
23	6-7-68	Houston	20.35	1.88±0.09	0.035 ± 0.012	0.00	0.00	
5	6-5-68	Brevard	17.58	4.24±0.21	0.030 ± 0.012	0.00	0.010 ± 0.007	
2	6-7-68	Beaumont	19.29	0.63±0.04	0.037 ± 0.011	0.006 ± 0.004	0.006 ± 0.004	
14	6-13-68	Old Hickory	17.60	4.47±0.21	0.31 ± 0.04	0.10 ± 0.02	0.075 ± 0.019	Mono Spray
14	6-5-68	Old Hickory	19.29	0.94±0.05	0.33 ± 0.03	0.19 ± 0.02	0.13 ± 0.02	Insulation Shop
14	6-14-68	Old Hickory	18.22	1.78±0.09	0.36 ± 0.04	0.12 ± 0.02	0.029 ± 0.012	Power House
25	6-5-68	Chambers	18.05	0.57±0.04	0.052 ± 0.013	0.065 ± 0.015	0.020 ± 0.008	
21	6-7-68	Circleville	18.38	4.37±0.21	0.12 ± 0.02	0.038 ± 0.014	0.038 ± 0.014	

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DU PONT COMPANY

SUMMARY OF PARTICLE AND FIBER COUNT

FOR June, 1968 SAMPLES

Sample Number	Date	Location	Volume Sampled Ft^3	Particle Counts in MPPCF				Remarks
				Particles	Asbestos Fibers			
					<5μ	5μ - 10μ	>10μ	
11	6-11-68	Victoria	19.53	1.26 ± 0.08	0.48 ± 0.05	0.027±0.011	0.059±0.016	
7	6-5-68	Chattanooga	19.73	3.18 ± 0.15	0.053±0.015	0.0081 ± 0.0058	0.012 ± 0.007	
25	6-7-68	Wilmington	15.05	4.82 ± 0.24	0.094±0.023	0.00	0.00	

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PROCEDURES USED FOR THE EVALUATION OF AIRBORNE DUST SAMPLES

EXHIBIT

The millipore filter was first visually examined to detect any dose dust or uneven dust deposition. In the few cases where the filter deposit did not pass this examination it was necessary to resuspend the collected dust in distilled water and refilter this suspension on VF-Millipore filter to assure an even dust distribution over the whole filter area. A pie shaped segment of the millipore filter was then placed on a microscope slide and rendered completely transparent with Cargille certified index of refraction liquids. In our tests we found Cargille liquid of an index of refraction of $n_D = 1.500$ to be best suited for this purpose. The counting of the dust particles and the counting and sizing of the asbestos fibers was performed with a Zeiss Photomicroscope using Phase Contrast Illumination. The objective was a Zeiss Neofluar Ph 63x phase contrast objective with a numerical aperture of 0.90. The eyepiece contained a Porton graticule, has a magnification of 20x and the intermediate magnification of the Zeiss Photomicroscope (called optovar) increased the magnification by an additional factor of 1.6x. Thus, the total working magnification was 2016x and the resolution was approximately 0.35μ, making the detection of particles and fibers possible down to a size of 0.30u diameter.

In the evaluation procedure all particles and fibers inside of the field of the Porton graticule were counted and the fibers were grouped by fiber length into 3 categories (less than 5μ, 5-10μ and larger than 10μ). This procedure was repeated for a number of randomly selected fields on the face of the filter. Because only a portion of the total filter area was evaluated by this method, it was necessary to correct the count by the ratio of the total filter area to the evaluated area. The resultant particle or fiber number was divided by the volume of the air sample and concentration was expressed as MPPCF (Millions of Particles Per Cubic Foot).

The statistical reliability of the evaluation was expressed as the standard deviation* of the concentration and is tabulated as the

* Standard Deviation is taken as $\sqrt{N}$ where N is the particle or fiber count.