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RESULTS OF AIR SAMPLES

AMERICAN BRAKE SHOE COMPANY
Friction Plant
Winchester, Virginia

IWS-32.25a

Report Prepared By:

Jeremiah R. Lynch

January, 1966

ABEX 081.100

SCF-ABEX-0975

January 26, 1966

plant #15

Mr. Charles B. Mallory
Plant Manager
American Trade Shoe Company
Winchester, Virginia

Dear Mr. Mallory:

The analysis of the air samples collected in your plant during our survey in September, 1965 has been completed, and the results are attached.

The impinger samples were counted during the survey using the American Conference of Governmental Industrial Hygienists' method. The membrane filters were rendered transparent and a 50-50 mixture of diethyl oxalate, dimethyl phthalate and counted at 430x magnification with phase contrast illumination.

All of the dust concentrations as measured by impingers were under the 5 million particle per cubic foot threshold limit value currently in use. The membrane filter method is experimental and no standards have been set for its interpretation. Some relationships between the impinger and filter measurement are discussed in the enclosed reprint.

Your cooperation in this study is sincerely appreciated, and the data gained from your plant is of considerable value.

Sincerely yours,

Jerrold B. Lynch
Senior Sanitary Engineer
Engineering Section
Research and Technical
Services Branch

Enclosure
cc: [illegible], Director (Through State Health Commissioner)
cc: [illegible]
[illegible], Region III, Surgeon Director

January 26, 1966

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Works Manager
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Winchester, Virginia

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The analysis of the air samples collected in your plant during our survey in September, 1965 has been completed, and the results are attached.

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Engineering Section
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Service Branch

Enclosure
cc (Through State Health Commissioner)
cc
B Weidner, Research Director, NIOSH

American Brake Shoe Company
Results of Air Samples of September, 1965
Winchester, Virginia
Friction

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	mg/cc Total	mg/cc 10 μ +
Mixing & Coating					
Compounder—BZ	116	0.7			
	107	0.2	108	0	0
	202	0.2	203	0	0
	129	0.3	130	1.9	0.5
Personal			2	0.6	0.4
			29	9.2	3.1
			30	0.6	0.2
			205	1.6	0.5
			206	0.3	0.1
			209	0.2	0.1
Weigher—BZ	10	0.4	11	0	0
	200	0.7	201	6.8	2.5
Personal			1	0.7	0.7
			3	1.1	0.6
			8	0.2	0.2
			207	3.0	1.4
Auto Roller Oper.—BZ	43	0.3	44	11.0	0.0
	45	0.3			
Personal			22	1.5	0.4
			25	1.3	0.5
			26	0.5	0.2
			27	2.9	0.8
			28	0.7	0.4

NOTES ON ABBREVIATIONS

"Personal" refers to personal samples on membrane filters
"BZ" refers to breathing zone samples by companion impinger & membrane filter
"Seq." refers to unattended samples taken by a sequential sampler
"Gen." refers to sample of general plant air in the particular department

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total mppcf	10 μ + mppcf
Mixing & Coating - Continued					
Auto Roller Oper. — Personal (Cont'd.)			158	0.1	0.0
			159	0	0
			210	25.0	0.1
			211	8.9	0.4
			212	2.4	0.0
Hand Roller—Personal			213	3.7	0.1
			214	35.8	0.1
Sweeper—Personal			19	0.6	0.2
Service Man—Personal			20	0.7	0.4
Quality Control—Personal			21	1.3	0.3
Preform—Personal			7	1.4	0.6
Forming					
Hand Roll Operator—BZ	139	0.4	140	2.5	0.6
Radius Roll—BZ	353	0.4	354	12.9	3.3
	291	0.6	292	3.1	0.4
Personal			293	2.7	1.0
			297	4.2	0.7
			348	1.5	0.3
Preform Operator—BZ	51	1.3	52	3.1	1.0
	137	1.2	138	7.6	1.6

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
				mg/cc	
	Sample #	mppcf	Sample #	Total	10 μ+
Forming (Continued)					
Preform Operator—BZ (Cont'd.)	147	1.9	148	11.5	4.5
	162	0.4	163	0	0
	176	3.9	177	3.6	1.0
Personal			142	16.9	3.9
			144	7.7	2.2
			145	4.8	2.5
			146	4.8	1.6
			153	8.4	2.9
			154	6.3	3.0
			155	7.1	2.7
			157	1.5	1.0
			160	10.8	4.6
			161	7.5	2.9
Hand Roll Operator—BZ	139	0.4	140	2.5	0.6
Radius Roll—BZ	353	0.4	354	12.9	3.3
	291	0.6	292	3.1	0.4
Personal			293	2.7	1.0
			297	4.2	0.7
			348	1.5	0.3
Preform Operator—BZ	51	1.3	52	3.1	1.0
	137	1.2	138	7.6	1.6
	147	1.9	148	11.5	4.5
	162	0.4	163	0	0
	176	3.9	177	3.6	1.0

American Drake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total	f/cc 10 μ +
Forming (Continued)					
Preform Operator—Personal			142	16.9	3.9
			144	7.7	3.2
			145	4.8	2.5
			146	4.8	1.6
			153	8.4	2.9
			154	6.3	3.0
			155	7.1	2.7
			157	1.5	1.0
			160	10.8	4.6
			161	7.5	2.9
Hot Pressing					
Sweeper—Personal			60	0	0.0
Serviceman—Personal			69	2.6	0.7
			160	2.8	1.0
Cinching Perss—Personal (Perm Fitter)			102	1.4	0.7
AEK & Press Oper.—HZ	84	0.1	83	0	0
Dock Press Oper.—DZ (Hot)	165	1.1	165	1.6	0.9
Personal			101	5.3	1.5
Service Man, Hot Press			141	2.7	0.6
			143	3.9	0.5

American Drake Shoe Company

Operation	Impinger		Konimeter		
	Sample #	mppcf	Sample #	Total mg/cc	10 μ + mg/cc
Hot Pressing (Continued)					
Hot Press Oper.—BE	63	1.0	04	0	0
	73	0.1	74	0.6	0.4
Personal			58	1.8	1.3
			59	3.4	0.7
			61	2.5	0.5
			62	0	0.0
			65	7.9	2.0
			66	2.9	0.9
			68	1.4	0.5
			70	2.6	0.9
			71	1.6	0.3
			72	3.3	1.2
			79	4.4	1.6
			80	4.3	2.2
			81	1.8	0.6
			82	0.2	0
			183	3.1	0.8
Baking					
Oven Oper.—BE Conveyor	221	0.4	220	0.4	0.0
Personal			193	1.4	0.6
Oven Oper.—Personal			194	1.9	0.5
			403	5.4	1.2
			404	0.5	0.1

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	[illegible]	[illegible]
Grinding & Sanding					
Radius Roll—DC			227	0.0	0
	245	0.5	244	3.5	1.4
Back Grinder—DC	261	0.3	262	1.8	0.2
	263	0.4	264	8.2	4.3
Strip Grinder—DC	332	0.3	333	1.6	0.2
Auto Grinder—DC	431	1.9	432	5.5	1.4
Stock Grinder—DC	339	0.6	340	2.1	0.8
Double Pick Break Grinder — DC	489	1.7	490	0.6	0.2
Rough Grind—DC	611	1.2	610	1.6	0.2
Radius Grind—DC	612	1.9	613	3.9	0.8
Belt Grinder	703	3.7	704	9.0	3.4
Auto Grinder DC Block	705	0.3	706	5.3	1.9
Coil Grinder—DC	351	0.4	352	3.1	0.8
Personal			268	1.3	0.7
Strip Finish—Personal			259	6.9	1.3
Turner Oper.—Personal			334	12.9	2.1
			336	3.0	[illegible]

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total mppcf/cc	10 μ +
Grinding & Sanding (Continued)					
Coil Grinder			296	3.7	1.2
Double Disk Grinder—Personal			384	5.4	2.5
Sweeper—Personal			409	5.0	2.3
Auto Burr. Mach.—Personal			393	19.7	7.3
Printer—Personal			242	7.6	2.7
			267	23.1	0.5
			335	3.0	0.8
Back Grinder—Personal			249	7.9	1.4
			254	0.7	0.2
			333	2.3	0.2
			298	1.2	0.5
			338	4.4	2.2
			345	18.5	2.0
Finish Grind Block—Personal			407	2.8	2.3
			408	7.8	2.5
Strip Grind.—Personal			256	15.6	0.9
			257	0	0
			264	7.4	2.5
Chamfer. Oper.—Personal			243	1.7	0.3
			247	0.1	0.1
			281	14.3	1.2
			391	4.1	1.4
			270	5.3	0.8
			246	13.9	1.3

American Drake Shoe Company

Operation	Impinger		Membrane Filter		
				fibers/cc	
	Sample #	mppcf	Sample #	Total	10 μ +
Grinding & Sanding (Continued)					
Face Grind—Personal			394	2.4	0.6
			395	10.2	2.9
			398	6.8	3.1
Cutting & Drilling					
Milling Mach. Oper.—Personal			387	6.8	2.4
			392	2.6	0.6
Printer—Personal			279	1.7	0.4
			389	13.3	4.6
Saw Oper.—BZ	326	0.4	327	5.1	1.4
Personal			258	1.8	0.4
			263	7.3	2.8
			266	4.3	1.1
			275	1.2	0.1
			295	1.5	0.2
			337	3.7	1.1
			349	2.4	0.7
			350	9.0	2.5
			386	6.1	2.1
Drill Operator—BZ	234	0.4	235	3.3	1.4
	306	0.2	307	6.6	3.8
	312	0.1	313	1.6	0.0
	614	1.5	615	3.5	1.0
			701	2.3	1.8
Personal			246	0.5	0.1
			248	2.0	0.1
			250	19.9	2.8

American Brake Shoe Company

Operation	Impinger		Werhrane Filter		
	Sample #	mppcf	Sample #	Total fibers/cc	10 μ +
Cutting & Drilling (Continued)					
Drill Oper.—Personal (Cont'd.)			251	0.0	0
			252	1.5	0.4
			259	1.4	0
			260	48.4	0.2
			265	6.1	0.4
			269	4.4	1.1
			277	0.5	0.0
			279	3.1	1.5
			282	2.5	0.6
			396	13.0	3.1
			397	3.5	0.8
			700	6.7	1.7
Teflon — Personal Lathe Oper.			197	0.9	0.3
			198	2.1	0.6
Ball Joint Punch			395	3.2	0.7
			67	1.0	0.3
Cutter			401	3.7	0.7
Porto Press			376	1.9	0.6
AIR Oven			199	3.5	0.6
Inspection & Packing					
Grouping—XX	368	0.3	369	4.7	1.0

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total	10 μ $
Inspection & Packing (Continued)					
Box Segments --Personal					
Printer, Leader			377	1.6	0.5
			378	1.7	0.7
			380	1.4	0.5
Packer--Personal			[illegible]	1.8	0.3
			383	0.9	0.5
			450	1.8	0.5
			471	4.2	1.2
			472	2.6	0.9
			463	2.6	0.9
Inspection Dry -- BZ	459	0.8	460	1.2	0.2
	474	0.7	475	0.0	0.0
Personal			278	2.6	0.5
			308	19.1	5.8
			441	8.9	2.5
			447	7.4	2.1
			[illegible]	[illegible]	[illegible]
			470	5.3	1.9
			499	9.9	3.4
Wet--BZ	366	0.3	367	0.6	0.0
	445	0.1	446	0	0.0
	467	0.9	468	1.6	0.0
Personal			439	1.9	0.6
			443	1.4	0.7
			444	1.4	0.5
			449	7.5	2.5
			451	3.1	0.8

American Drake Shoe Company

Operation	Impinger		Membrane Filter		
				[illegible]	
	Sample #	mppcf	Sample #	Total	10 μ +
Inspection & Packing (Continued)					
Box Segments --Personal					
Printer, Loader			377	1.6	0.5
			378	1.7	0.7
			380	1.4	0.6
Packer--Personal			382	1.8	0.3
			383	0.9	0.5
			450	1.8	0.5
			471	4.2	1.2
			472	2.6	0.9
			463	2.6	0.9
Inspection Dry -- BZ	459	0.8	460	1.2	0.2
	474	0.7	475	0.0	0.0
Personal			278	2.6	0.5
			388	19.1	5.8
			441	8.9	2.5
			447	7.[illegible]	2.1
			[illegible]	[illegible]	[illegible]
			470	5.3	1.9
			499	9.9	3.4
Wet--BZ	366	0.3	367	0.6	0.0
	445	0.1	446	0	0.0
	487	0.9	488	1.6	0.0
Personal			439	1.9	0.6
			443	1.4	0.7
			444	1.4	0.5
			449	7.5	2.5
			451	3.1	0.8

American Brake Shoe Company

Operation	Impinger		Membrane Filter		
	Sample #	mppcf	Sample #	Total	10 μ +
Inspection & Packing (Continued)					
Wet--Personal (Cont'd.)			452	5.0	1.3
			453	3.1	0.8
			461	5.4	1.7
			462	0.7	0.3
			464	4.3	1.3
Leader--Personal			442	1.7	0.6
Miscellaneous					
Shipping Checker--Personal			379	0	0
Wire Slitter--Personal			204	2.7	0.8
Printer--Personal			500	2.1	0.6
PC Room--Personal			411	2.9	1.3
Electrician--Personal			195	1.4	0.8
			[illegible]	1.4	0.4
			410	1.0	0.4
Maint. Crew--Personal			400	0.6	0.1
			404	3.3	1.1
			412	1.7	0.5
			413	1.8	0.4