Dust

DUST SURVEY OF THE RAYBESTOS DIVISION BRIDGEPORT & STRATFORD PLANTS.

MARCH - 1936

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Mr. Morton Judd:

Enclosure comment to conclusions and recommendations of the Survey of Raybestos Division of Raybestos - Manhattan - Bridgeport and Stratford Plants by Industrial Health Section, Metropolitan Insurance Company.

Conclusions and Recommendations - Bridgeport Plant

All of the dust counts in this plant show less than ten million particles per cubic feet of air sampled. While these counts are not considered as dangerous concentrations, they are much higher than on the previous survey made in 1930, with the exception of those in the warp room. All but four of the looms have been moved to different locations since the first survey. A check of the records would show a comparison of the type of yarn used and rate of production at the time of the two surveys.

Sample #15, taken at the inspection table on the second floor shows the highest count. The concentration at this point could be decreased materially by the proper exhaust equipment. The present system is not designed properly to take care of the dust generated.

COMMENT:

The correction of this hazard is of a mechanical proceedure and I feel should be taken up by someone who is capable of designing and constructing a larger and more appropriate exhaust equipment.

Sample #34 shows the presence of lead. This amount is not considered dangerous, but it would be advisable to have the workmen at these looms examined periodically for any signs of lead poisoning. The only sample in the Brake Department showing lead was sample #29. This is not considered a dangerous amount, but does indicate that there is a potential hazard present.

COMMENT:

As lead is a slow accumulating poison and is detected early in the blood cells, it is advisable to arrange some course of proceedure that at certain periods throughout the year men who have been exposed to lead compounds shall be examined for its early presence. As the amount present is not considered dangerous, the ones that would be discovered absorbing the toxin no doubt, would be those that are pre-disposed to poisoning by small amounts. In this way, we would be cautioned and be able to check the men to see just how compatible they are to the presence of lead.

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Conclusions and Recommendations - Stratford Plant

Sample #6 taken at the fibre opener shows a high dust count. This is accounted for by the method of handling the fibre and not the opener itself. The fibre is dumped from bags onto the floor and then shoveled into the opener. The fibre is carried to a hopper above and then falls through a pipe into a truck which is located about six feet from the opener. The operator stands between the opener and the truck and shovels the fibre into the opener at the same time that it is falling into the truck. The dust concentration at this point could be decreased by the proper handling of the fibre.

COMMENT:

This matter should be taken up with the foreman of the Department to see if he cannot arrange to have some form of an enclosure placed over the units of this proceedure, so as, the dust would not fly about the rest of the room. The man or men thusn handling the fibre could be equipped with gas masks of some form to prevent them from inhaling the contaminated air and thus pre-dispose them to some form of pneumonokoniosis.

Samples #2, 3 and 4 show that there is lead present in the air at these points. While these samples do not show a dangerous amount, it would be well if the workmen engaged at these places were examined periodically for signs of lead poisoning. Notice was taken at the time of this survey of the method of handling litharge. This material is handled carelessly as it can be found lying on the floor in the room where it is weighed and around the mixers.

COMMENT:

It would be well to educate the foreman so as he could impress the men of the possibilities of the dangers of the material handled and in this way they would be more cautious. Emphasize should be made in describing the early symptoms of lead poisoning and the men should be assured that the little exposure to which they are in contact with is not dangerous if they are careful about their work.

Blood examination should be adopted with these individuals as a precautionary measure.

Sample #13 shows a low count. Three men were engaged in filling the beaters. Practically all of the material put into the beaters was waste asbestos board. Very little raw asbestos was added. No doubt the count at this position would be higher if more raw asbestos fibre were used out of the bags. It is recommended that the bags of asbestos fibre be stored in a room isolated from the remainder of the plant. This would eliminate dust generated in the piling and unpiling of these bags in the room and exposing more people to the dust than is necessary.

COMMENT:

This matter should be adjusted and corrected by the foreman in charge.

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Conclusions and Recommendations - Stratford Plant

Samples #1[5], 24, 28, 31 and 32 all show that lead was present in the air sampled. Sample #30 is the only one that approaches a dangerous amount. This sample also shows a high dust count. The high dust count at the two Blanchard grinders #3 and 4 is due to the method of handling the brake lining during the grinding operation. This lining is the P.G. molded type and a number of strips are placed together for grinding off the edges. After the edges are ground on one side, the operator blows off the clinging dust with an air hose and reverses the strips to grind the opposite edges. This type of grinding should be done on the grinding machines designed for this particular work. It was observed that a great amount of the dust present in the air is caused by the handling of the material after grinding. Dust clings to the individual places, and when the stacks are moved about they are not put down carefully. This results in dust clouds arising.

COMMENTS:

The report is conclusive evidence of the need for altering the type of machinery used. These men also should be checked for possible accumulation of lead in their body.

Samples #2[5] and 26 show high counts. Large size brake lining was used at the time these samples were taken. It was observed that the exhaust hood on machine #10[5] did not catch all of the dust from this type lining. When smaller sizes of lining are ground on this machine the hood seems to catch most of the dust generated. The hood should be changed to take care of all sizes of lining ground on this machine.

COMMENTS:

This is a matter that the foreman should see adjusted. He is present at the plant supervising the work and there is no reason why he should not see that hoods are changed for the proper type of lining, as it is used.

PROPOSAL:

It is apparent that the need of a clinical laboratory is needed for the examination of blood smears to detect early lead poisoning. Some ways and means shall have to be adopted either (1) By maintaining facilities at the plants where the men are working and thus examine small groups and keep record of their blood at intervals say of, six month period or (2) To have them go to some laboratory on the outside where proper arrangements can be made for this prophylactic measure to be carried on.

A resume of the various health hazards in the plants has been narrated. I have tried as best possible to instruct the first aid attendants to inform me of the presence of individuals exposed to them and personally where I have found one who has an idiocyncrosy to them as some individuals are more susceptible than others to see that their position is changed and to adjust matter in the most compromising way between the men and the forman. May I state cooperation to this extent has been favorable. The biggest problem has been with skin rashes of the coal-tar products causing a dermatitis. Miss Ella Tingard, has been most capable in handling this matter with me.

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List to Lewis

RAYBESTOS - MANHATTAN, INC.

BRIDGEPORT AND STRATFORD PLANTS

This survey was made on the 24th, 25th, and 26th of March, 1936.

BRIDGEPORT PLANT

It is evident from the dust counts of this survey that the dust conditions of the weave rooms have been improved. The change from the dry binder to wet binder is the reason for this improvement. This survey was made under winter conditions with most of the windows closed.

Comparing the survey of 1935 and that of 1936 other facts are noticed. At the time of the 1935 survey, seven looms were running on the third floor as compared with four at the time of the 1936 survey. There were fewer looms running on the second floor at the time of the 1936 survey than were running during the 1935 survey.

The dust concentrations at the warp machines may vary to a considerable extent depending upon the moisture content of the yarn, the speed at which the machines are operating, and the amount of natural ventilation; however, the operators have been supplied with approved respirators for protection against the dust generated.

The condition of the Brake Department has been improved by the removal of the drill presses.

The exhaust hood of the Pratt and Whitney Grinder has also been improved.

Table #1 shows results of 1936 survey

Table #2 - shows comparative results of identical locations or operations of survey of 1935 and survey of 1936.

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BRIDGEPORT PLANT - TABLE #1

Sample No.	Station	Date	Cu. Ft.	Millions of particles per cu. ft. of air sampled	Type of Dust	Lead Results mg/cu.ft.	mg/cu.m	mg/10 hr. day	Remarks
1.	2nd floor - between looms #225 & 227	3/24/36	40.0	.90	Asbestos				Old looms #30 - 31
2.	2nd floor - between looms #234 & 236	"	39.2	1.2	Lead	000	000	000	Old looms #29 & 37
3.	2nd floor - at loom #9	"	37.5	.85	Asbestos				
4.	" " - at loom #220	"	47.1	1.1	"				Old loom #25
5.	" " - between looms #238 & 240	"	34.5	1.4	"				Old looms #62 & 63
7.	2nd floor - at inspection table	"	42.2	3.6	"				Exhaust system - damp stock
8.	" " - at loom #45	"	42.3	1.6	"				
6.	1st floor - between looms #82 and #83	"	45.6	1.2	"				
9.	1st floor - warp room between cop winders	"	50.9	1.3	"				1022 - Zinc yarn 1030-1 cotton 1032 - Mule
11.	1st floor - " " #3 warp machine - run at fast speed. 1030 - 1 cotton	"	27.1	5.8	"				Corresponds to 2 in previous survey
15.	1st floor-warp room-warp machine #6 - 1033 mule	3/25/36	28.8	17.1	"				Windows closed-respirators supplied to workmen
10.	1st floor - Brake department general air	3/24/36	42.2	.90	Brake lining clutch facing	.000425	.015	0.15	Taken near presses drill presses moved to Stratford

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BRIDGEPORT PLANT - TABLE #1 (CONTINUED)

SAMPLE NO.	STATION	DATE	CU. FT.	LEAD RESULTS MILLIONS OF PARTICLES PER CU. FT. OF AIR MG/CU.FT.	MG/CU.M	TYPE OF DUST	MG/10 HR. DAY	REMARKS
12.	1ST FLOOR-BRAKE DEPARTMENT AT PRATT & WHITNEY GRINDER BRAKE LINING	3/24/36	32.9	2.3	4	BRAKE LINING		EXHAUST HOOD IMPROVED SINCE PREVIOUS SURVEY
13.	3RD FLOOR - BETWEEN LOOMS #319 & 321	3/25/36	47.9	4.6	7	ASBESTOS		OLD LOOMS #63 & #69
14.	GENERAL AIR NEAR LOOM #307	"	45.2	3.3	5	"		4 LOOMS RUNNING ON 3RD FLOOR

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BRIDGEPORT Pl...t - TABLE #2

Survey of March, 1936 Sample Number	Dust Count in Millions of Particles per cu. ft. of air sampled	Survey of June, 1935 Sample Number	Dust Count in Millions of Particles per cu. ft. of air sampled	Remarks
2nd Floor				
3	.85	12	9.9	Loom #10 removed since 1935 survey.
1	.90	7	3.6	
2	1.2	34	4.5	
4	1.1	11	3.5	
7	3.6	15	9.6	
3rd Floor				
13	4.6	4	6.1	Loom #68 not running 1935 survey
14	3.3	8	5.4	
1st Floor				
6	1.2	16	2.5	
11	5.8	19	3.3	
9	1.3	25	2.6	
Brake Department				
10	.90	18	1.3	
12	2.3	29	2.2	

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Old No.		New No.	No. Spaces	Size	Type		Type of Yarn
(30	-	225	16	2 x 5/32	B 50 E	Wet Binder & Filling-	(1032 Mule & Jute
(31	-	227	16	2 x 5/32	B 50 E	" " "	(
(29	-	234	12	2 x 196	154 W04	Stuffed Binder & Filling	(1030 - 1 Cotton
(37	-	236	12	2 x 196	154 W04	" " " "	(1032 - 1 C.C.
							(1033 - Mule
9	-	—	3	13/4 x 1/4	BPT.	Wet Binder & Filling	(1032 - Mule
			4	2½ x ¼	BPT.	" " " "	(1030 - 1 Cot.
							(1033 - 1 Cot.
25	-	220	3	1 7/8 x 1/8	Z-120	Stuffed Binder & Wet Filling	(1033 - Mule
			3	1 7/8 x 133	Z-120	" " " "	(1030 - 1 Cot.
			3	1 11/16 x 133	Z-120	" " " "	(1032 - L C Z
			3	1 13/16 x 133	Z-120	" " " "	(1032 - Z
(62	-	238	12	2 x 3/16	Rayb.	Wet Binder & Filling	(1032 - Mule
(63	-	240	12	2 x 3/16	Rayb,	" " " "	(1030 - 1 Cot.
82	-	—	1	2½ x 5/16	F.W.	Wet Binder & Filling	(1030 - 1 Cot.
			1	3 x 5/16	F.W.	" " " "	(1033 - 1 Cot.
			2	5 x 5/16	F.W.	" " " "	(1030 - 2 Cot.
							(1032 - 1 Cot. Zinc
83	-	—	1	9¼ x 1	No Wire	Dry	(1030 - 2 Cot.
			1	9 3/4 x 1	No Wire	Dry	(1090 - Rope
45	-	—	2	3 x ¼	Bpt.	Wet Binder & Filling	(1033 - Mule
			1	3½ x ¼	Bpt,	" " " "	(1033 - 1 Cot.
			3	4 x ¼	Bpt.	" " " "	
69	-	319	20	1⅛ x 1/8	R.S.	Wet Binder & Filling	(1032 - Mule
68	-	321	20	1½ x 1/8	R.S.	" " " "	

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STRATFORD PLANT

The samples taken during this survey show improvement in most of the locations.

* The dust concentration around the heaters may vary with the amount of raw material used. The heater room should be separated from the rest of the plant to guard against the pollution of the atmosphere of other sections of the building. The heater used in making pulp which contains litharge should be in a separate room from the others and employees should be required to wear approved respirators.

The dust concentrations at the Blanchard Grinders, Cincinati Grinder, external grinders, and internal grinders, is probably caused more by the handling of the material than by the machines. Dust can be seen rising from the stacks of rings when they are moved. The employees at these machines have been supplied with approved respirators. The approval should be for lead dust as well as other dusts.

The exhaust equipment installed since the 1935 survey has improved dust conditions in that section of the building and around those machines that have exhaust hoods connected to it.

Sample #25 shows a very high count. This work is done on all clutch facing rings. The dustgenerated tends to pollute the atmosphere of the entire inspection room. This work should be done in a separate room or an enclosure that has an exhaust system installed to remove the dust generated. The employees doing this work should be supplied with positive pressure respirators supplied with clean air.

* Sample #1, taken in the fibre room of #6 Department, is high. The shaker screen should be enclosed; however, there is only one employee

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working in this room, and he is supplied with a respirator which is adequate protection provided that it is maintained properly and used.

Table #3 shows results of 1936 survey.

Table #4 shows comparative results of identical locations or operations of survey of 1935 and survey of 1936.

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STRATFORD PLANT - TABLE # 4

Survey of March, 1936 Sample Number	Dust Count in Millions of Particles per cu. ft. of air sampled	Survey of June, 1935 Sample Number	Dust Count in Millions of Particles per cu. ft. of air sampled	Remarks
2	.94	2	2,3	
3	.73	4	2.6	
6	2.8			
14	3.2	12	4.4	
4	4.5	13	1.4	
7	1.4	18	6.5	
8	3.5	22	2,6	
9	2.7	20	1.4	
11	3.0	14	1.8	
12	1.9	27	4.1	
15	4,7	30	12,8	
16	2.0	24	1.9	
17	1.6	32	2.3	
18	.94	28	1.8	
23	1.3	26	12.0	
19	1,4	16	1,4	

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STRATFORD PLANT - TABLE #3

Sample No.	Station	Date	Cu. Ft.	Millions of Particles Per Cu. Ft. of Air Sampled		Type of Dust	Lead Results mg/cu.ft.	mg/cu.m.	mg/10 hr. day	Remarks
	#6 Dept.									
1.	Fibre Room - Shaker screen and opener running	3/25/36	32.6	19.0	113	Asbestos				Fibre falling into hand trucks
2.	Between mixers #11, 12, 14, & 15	"	40.2	.94	5	Asbestos Lead	.000348	.0123	0.123	
3.	Between mixers #4, 5, 17, & 18	"	52.6	.73	4	"	000	000	000	
5.	Weighing litharge from drum to pan on scale & dumping into mixer #19	"	7.5	6.4	38	Lead	.00187	.066	0.66	
4.	Filling beater #2	"	76.0	4.5	27	Asbestos				
6.	At press #15-cutting rings on cutting presses	"	32.6	2.8	17	"				Woman wipes and stacks rings on to skid
7.	At Blanchard grinder #1 clutch facing rings	"	30.0	1.4	8	Clutch facing	000	000	000	Exhaust
8.	At automobile drill press #60	"	28.8	3.5	21	" "	.00243	.858	0.858	"
9.	At Cincinati grinder 500 cure rings	3/26/36	58.6	2.7	16	" "	000	000	000	" respirator
10.	Testing rings for Brinnell hardness	"	28.1	1.6	8	" "	000	000	000	One man respirator
11.	General air - between two calenders	"	3 1.6	3.0	18	Asbestos				
12.	At Internal grinder #4 machine #46	"	40.6	1.9	11	Clutch facing	.000345	.0122	0.122	Exhaust. respirator
13.	At Stedfast-Roulston grinder machine #264	"	55.4	1.2	7	Brake lining	000	000	000	Grinding lining to width. Exhaust

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STRATFORD PLANT - TABLE #3 (CONTINUED)

SAMPLE NO.	STATION	DATE	CU. FT.	MILLIONS OF PARTICLES PER CU. FT. OF AIR SAMPLED		TYPE OF DUST	LEAD RESULTS MG/CU.FT.	MG/CU.M	MG/10 HR. DAY	REMARKS
14.	SAME AS #6 BUT TAKEN AT PRESS #17	3/26/36	34.0	3.2	.14	ASBESTOS				
15.	BETWEEN BLANCHARD GRINDERS #4 & 5	"	43.0	4.7	.28	BRAKE LINING CLUTCH FACING	.000326	.0115	0.115	
16.	AT SANDER-MACH. #123 BELT SANDER	"	21.6	2.0	.12	BRAKE LINING	000	000	000	ONE MAN, EXHAUST
17.	AT SANDER #92	"	28.6	1.6	.07	" "	000	000	000	2 MEN, EXHAUST
18.	AT INSIDE GRINDER MACH. #126	"	38.5	.94	.05	" "	.000727	.0257	0.257	ONE MAN, "
19.	GENERAL AIR - INSPECTION AND SHIPPING DEPT.	"	39.1	1.4	.08	CLUTCH FACING	000	000	000	
20.	AT AUTOMATIC DRILL PRESS MACH. #283	"	56.5	.82	.06	BRAKE LINING	000	000	000	ONE MAN, EXHAUST. MACH. MOVED FROM BRIDGEPORT PLANT
21.	AT SHAPER #130 GRINDING ENDS OF BRAKE LINING	"	27.7	3.5	.21	" "	000	000	000	ONE MAN, EXHAUST
22.	AT INSPECTION TABLE - CLUTCH FACING	"	36.9	4.2	.23	CLUTCH FACING RINGS	.000759	.0264	0.264	4 WOMEN - THREE MEN
23.	AT EXTERNAL GRINDER MACH. #265	"	38.6	1.3	.07	BRAKE LINING	.000363	.0128	0.128	SIMILAR TO #105 IN PREVIOUS SURVEY. ONE MAN, EXHAUST
24.	BETWEEN SHAPER #116 AND SANDER #117	"	31.6	2.1	.13	" "	.000686	.0313	0.313	ONE MAN ON EACH MACH. EXHAUST ON " "
25.	TAPPING RINGS - INSPECTION FOR CRACKED RINGS	"	26.8	82.1	4.9	RING	.00261	.0921	0.921	ONE MAN

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