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Johns-Manville

TWENTY-TWO EAST FORTIETH STREET
NEW YORK, N.Y.

January 5, 1934

Mr. M. F. Judd,
Raybestos-Manhattan, Inc.,
Bridgeport, Conn.

Dear Mr. Judd:

I am enclosing herewith a copy of the "minutes" of the meeting held in Mr. William's office yesterday afternoon. If you come across any inaccuracies I shall greatly appreciate your calling them to my attention.

Very truly yours,

Vandiver Brown

Vandiver Brown
Attorney

VB:T
Enclosure

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STATE OF CONNECTICUT
DEPARTMENT OF HEALTH, HARTFORD, CONN.

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MAY 4, 1934.

ASBESTOS DUST STUDY
STRATFORD PLANT
RAYBESTOS-MANHATTAN, INCORPORATED
BRIDGEPORT, CONN.

A dust study was made on December 12, 1933, to determine the dust concentrations in the vicinity of operations conducted in the Stratford Plant of Raybestos-Manhattan, Incorporated. Samples were collected in the immediate vicinity of the various units of equipment which were believed to produce the greatest amount of dust in the manufacture of molded brake lining, clutch disks, and asbestos material.

METHOD OF DUST DETERMINATION.

Dust samples were collected by drawing measured volumes of air through an impinger at the rate of one cubic foot per minute. After a representative portion of the air has been drawn through the impinger, the dust particles in the sample are counted in accordance with the United States Public Health Service standard technique. The dust counts reported include all the particles found, since asbestos fibres longer than ten microns have been demonstrated in lung tissue.

RESULTS OF AIR SAMPLES.

GRINDING OPERATIONS:

Local exhaust ventilation has been provided for all grinding operations. Air samples were collected to show the exposure of the operator at each type of grinding operation with the exception of one or two which were not operating. The results of these samples are given in Table No. 1.

The exposure of the operators of the Blanchard Machine, the Cincinnati Machine, and the internal boring machine were found to be 0.595 million, 0.833 million, and 2.04 million particles per cubic foot of air, respectively (Samples No. 1, 2, 3, Table No. 1.) It was noted that a small visible dust cloud was produced when the clutch discs were stacked prior to placing

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The physical examination including X-ray of all new employees is to be recommended both for the protection of the man himself and also for protecting the Company.

ALBERT S. GRAY, M. D.

Director - BUREAU OF OCCUPATIONAL DISEASES.

SUMMARY TABLE.

ASBESTOS DUST STUDY.

STRATFORD PLANT

RAYBESTOS-MANHATTAN, INCORPORATED
BRIDGEPORT, CONN.

EXPOSURE OF OPERATORS.

Sample No.	Location and Operation.	No. of million particles per cubic foot of air.
1.	Operating Blanchard Machine	0.59
2.	Operating Cincinnati Machine	0.85
3.	Operating Internal Boring Machine.....	2.04
4.	Operating Internal Brake Grinder	3.75
5.	Operating External Brake Grinder	22.7
6.	Operating Universal Grinder	1.76
7.	Inspecting Clutch Discs at Ring cutting operation	4.41
8.	Loading Beater with raw and scrap asbestos	13.6
9.	Operating Pulverizer	10.3
10.	Operating Opener (Duct at rear opened for cleaning).....	16.7
11.	Operating Opener and Screen (Duct at rear of opener not opened)	4.26

WARREN A. COOK,
Industrial Hygienist.

WAC:HB.

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in the grinding machine. The concentration of dust from this source is however apparently insignificant in view of the very low counts obtained in Samples No. 1 and No. 2. The ventilation system at each of these machines was shown to be effective in the removal of dust produced in these operations.

Sample No. 4 shows the exposure of the operator of the Internal Brake Grinder. The operator stood at the edge of a visible cloud which escaped from the exhaust system. The dust concentration of 3.75 million particles of dust per cubic foot of air found as the exposure of the operator would indicate that most of this visible cloud was due to smoke produced by partial carbonization of the material with which the brake band lining was impregnated.

Sample No. 5 was collected to determine the exposure of the operator of the external grinder of brake band linings. During the ten minute sampling period seven minutes were spent in grinding thin stock and the remaining 3 minutes in grinding the thicker stock. The sample was collected to represent the average dust exposure in this operation. The dust concentration at the breathing point of the operator was found to be 22.7 million particles per cubic foot of air.

Sample No. 6 was collected over a fifteen minute period representing the average exposure of the operator of the Universal grinder. Large and small discs were being ground at the time of sampling. Both the large and small discs were being ground during the first three minutes, only the larger ones during the following nine minutes, and only small discs during the last three minutes of the fifteen minute period. Under these representative operating conditions a concentration of 1.7 million particles of dust per cubic foot of air was found.

TABLE NO. I

DUST EXPOSURES OF OPERATORS OF GRINDING MACHINES.

Sample No.	Machine Being Operated.	No. of million particles per cubic foot of air.
1.	Blanchard Machine	0.59
2.	Cincinnati Machine	0.83
3.	Internal Boring Machine	2.04
4.	Internal Brake Grinder	5.75

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Connecticut Department of Health, Asbestos Dust Study of Raybestos-Manhattan's Stratford Plant (1934)
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Sample No.	Machine Being Operated.	No. of million particles per cubic foot of air.
5.	External Brake Grinder	22.7
6.	Universal Grinder	1.76

RING CUTTING:

At the time of the study only one of the ring cutting machines was being operated. Of the three workers exposed to dust produced by this operation, the inspector appeared to be subjected to the greatest concentration. Sample No.7 was consequently collected to determine the exposure of this inspector while examining the asbestos rings as they came from the ring cutter. A fifteen minute sample was taken at the breathing level of the inspector located several feet in front of the ring cutter. The exposure at this point was 4.41 million particles per cubic foot of air during normal operation of the machine.

BEATER OPERATIONS:

Much dust is produced in feeding asbestos to the beater. In order to learn the exposure of the two men conducting this operation, a 15 minute air sample was collected at the breathing level of these workers. During two minutes of the sampling period, four and one-half bags of raw asbestos were loaded into the beater. The rest of the load consisted of scrap asbestos which was being added during the greater part of the sampling period. Although higher dust concentrations were obviously being produced in loading the raw asbestos, the sample was collected during the loading of both these materials in order to be representative of this operation as it is usually conducted. This sample was taken only during the actual loading operation. The concentration of dust was found to be 13.6 million particles per cubic foot of air (Sample No. 8).

PULVERIZING, OPENING AND SCREENING OPERATIONS:

The preliminary operations of opening and screening raw asbestos and pulverizing scrap asbestos are conducted in another building. These operations are segregated so that only the workers actually conducting them are exposed to

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to the dust produced.

Sample No. 9 was collected to determine the exposure of the oper or of the pulverizer. In this unit scrap asbestos is broken down or pulve ized in preparation for further use. Although the pulverized scrap is dra from the pulverizer through a closed tube, excessive amounts of dust escape from this machine. The operator was also exposed to an appreciable amount dust while changing the bags into which the asbestos was discharged. A ten minute air sample was taken after this unit had been in operation for severa minutes but when no other operations were being conducted in this room. The dust concentration at the breathing point of the operator was found to be 10.3 million particles per cubic foot of air.

Sample No. 10 represents the exposure of the operator of the opener. The duct in the rear of the opener was cleaned once during the sampling period. This operation releases large quantities of dust into the atmosphere and probably accounts for the high average exposure of the operator during this period. This exposure was found to be 16.7 million particles per cubic foot of air.

Sample No. 11 represents the exposure of the worker during the operation of both the opener and the screen. During the collection of this sample the duct at the rear of the opener remained closed. Although the operation of the screen in itself would contribute to the dustiness of the general room atmosphere, the exposure of the operator while both units were in operation was found to be 4.26 million particles per cubic foot of air. The fact that Sample No. 11 showed a lower dust concentration than Sample No. 10 bore out the assumption that cleaning out the duct at the rear of the opener was the principal factor in the high dust concentration found in Sample No. 10.

TABLE NO. II.

DUST EXPOSURE OF OPERATOR.

Sample No.	Machine Being Operated.	No. of million particles per cubic foot of air.
9.	Pulverizer	10.3
10.	Opener (Duct at rear opened for cleaning	16.7
11.	Opener and Screen (Duct at rear of opener not opened)	4.26

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CONCLUSIONS.

The air samples collected December 12, 1933 at the Stratford Plant showed that most of the operations are so conducted that the workers are exposed to low dust concentrations. A number of the operations however were shown to expose the workers to appreciable concentrations of dust.

The dust produced by the grinding equipment was very well controlled with the exception of the external brake grinder. In view of the effective manner in which other difficult dust removal problems have been met in your plant, it is believed that a similarly effective exhaust unit could be devised for the external brake grinder.

The workers engaged in loading the beater produce a considerable quantity of dust while conducting this operation. Since this operation is not segregated, the dust produced here not only exposes these workers to excessive concentrations of dust but also adds to the general dustiness of the room. Although this operation is conducted only two or three times during the day, suitable methods for the reduction of the dust concentration at this point should be investigated.

The workers conducting the preliminary operations of opening, pulverizing and screening were found to be exposed to excessive dust concentrations. The principal cause of dust in the operation of the opener appeared to result from cleaning the choked outlet duct. It would seem advisable to so operate this equipment that escape of dust from this source may be reduced as far as possible.

The escape of dust from the pulverizer should be prevented. The receiver of the pulverized asbestos should be such that no dust is introduced into the room air from this source.

A surprisingly low concentration of dust was found during the operation of the screens. It is suggested that further dust determinations be made during operation of the screens after the other equipment in this room has been given attention.

It would be desirable to reduce the dust concentration at the ring cutting and inspecting operation. This might be best effected by handling the rings over an exhausted grating on the bench.

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