

FILE NAME: Powhatan (PHN)

DATE: 1954

DOC#: PHN012

DOCUMENT DESCRIPTION: Govt Inspection Reports

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION

RECORD OF INVESTIGATION OR SERVICE

Date 4/5/54 By R.S.

Plant Powhattan Mining Corp. Industry 7
Area Woodlawn (6721 Woodlawn Rd.) County: Balto.
Address Woodlawn (6721 Woodlawn Rd.)
Number of Employees: Male 9 Female 2 Total 11

Purpose of Visit 1H

Persons Interviewed:

Reason:

No. involved

Mr. D. Smith
Foreman

Self initiated ✓

O. D. Report

Survey

Reinspection

Study

Consultation

Special Activity

Project Activity

Follow-up 9

Occupational Disease

Complaint or

Request

Source:

Management

Labor

Neighbors

Health Office

Other

Recommendations Regarding Environmental Problems

Problems	Number Affected	Requested Improvement	Date Completed
New			
Past - Completed			Made
Uncompleted:	<u>300</u>		

Field Studies: Instrument Used No. Detn. No. Involved

Atmospheric Contaminants

Physical Conditions

Samples submitted for analysis:

Next Visit see 4-7-54 sheet

Reviewed

report on this on 4-7-54 visit
1,000 - 12/1/53

Secretary to the organization, was contacted. The Foreman. An inspection was then made of the entire plant. The damp, asbestos ore which may run anywhere from 70 to 90%+ asbestos is delivered to the plant by truck. When needed, the ore is placed on a heating floor composed of sheet metal overlying in excavation under the plant into which hot gases from a oil burner can be blown to provide heating. In this matter, the moisture is driven out of the asbestos ore. The dry ore is then shoveled into wheelbarrows and carried to the dumping chutes into the various grinding processes. This process will be changed in the very near future inasmuch as the Company has purchased a rotary kiln of rather small size. This kiln is to be located outside of the grinding room. The foreman stated that exhaust ventilation would be placed on the rotary kiln to prevent exposures to excess dust.

The shoveling of the damp ore created surprising little dust. This is a very periodic operation and controlled by respirators would certainly seem to be sufficient. Even the shoveling of the dry ore was not notably dusty. Here again, the loading of the wheelbarrows was rather a periodic operation and controlled by respirator should be sufficient. A considerable amount of dry sweeping was observed. This operation created considerable dust. For this reason, and others, I feel that we should recommend the use of a wet ore dry type vacuum for use in clean-up of this plant.

On leaving the drying floor in wheelbarrows, the ore is carried to one of two processes designated by the Foreman as the crusher process or the ball mill process (See attached sheet and diagram). The ore is fed into each of these processes by shoveling into a chute from the pile made by dumping the wheelbarrow. Dust studies should be made on this shoveling operation inasmuch as it is a full day's job. A third process using a dry pan is at present being installed and will be in operation in the near future. It is my understanding that the overwhelming bulk of the material will still be ground in the crusher system. The ball mill and dry pan system will be utilized for special jobs. No exhaust ventilation has been placed in any of these systems for the purpose of providing protection against dust to the worker. All three systems, however, make use of pneumatic conveying to some extent. As such, the bulk of the system is under negative pressure which helps to prevent dust leaks to the air and does provide a certain amount of local exhaust ventilation at least at the point where the ore is shoveled into the crusher system. The screening operation on the crusher system causes a fair amount of dust. The walls and the machinery themselves are rather heavily coated with asbestos dust, and as a result of this poor house-keeping, the vibration of the equipment most certainly adds to dusty conditions. Fortunately the screening systems are not used very often during the course of a run. Therefore, the dust from this source is minimized. The processes were observed in operation and were not notably dusty. The end product is in all cases placed into burlap bags. Here again, there is surprisingly little dust. I believe that the reason for this is that the bulk of the material is long fibres which clump together forming rather heavy masses which in themselves tend to hold the smaller particle in place.

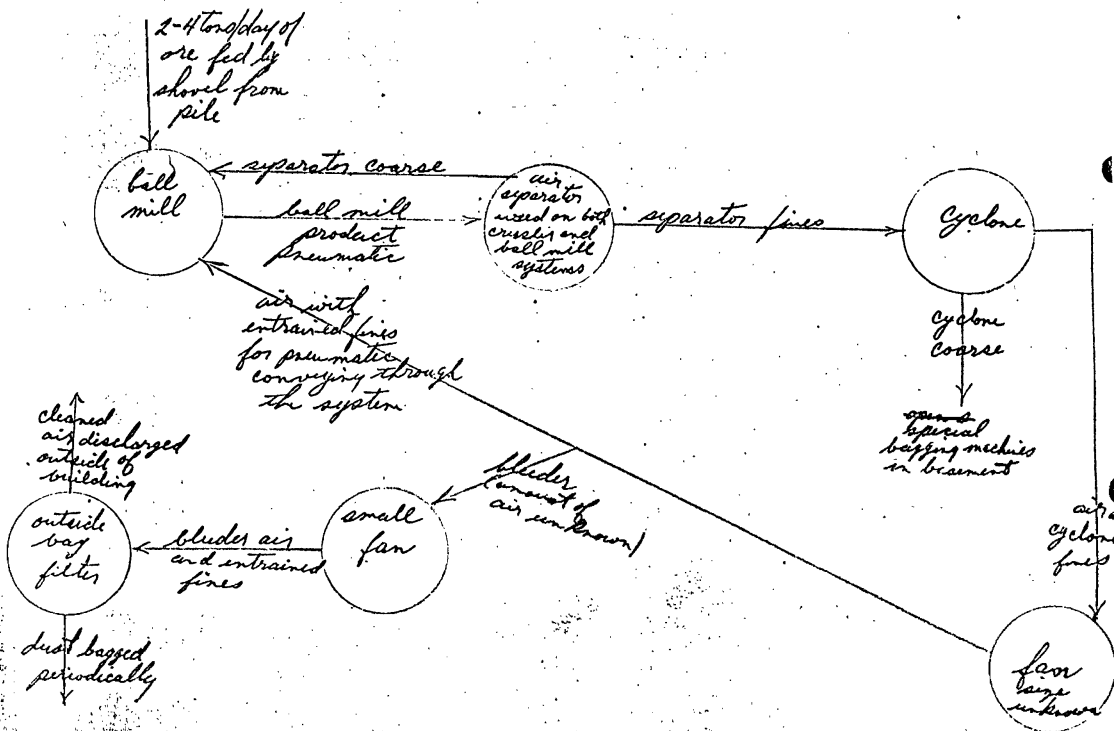
An asbestos refining process takes place in an adjacent building. The asbestos is cooked in muriatic acid in large crocks outside in the open air. The operator wears gloves but does not have goggles. The acid is transferred to the jugs by dumping one gallon of twenty degree bume acid into a pitcher which is then placed into the cooking kettles. The cooking is performed by running steam into the kettles. After sufficient cooking, the entire kettle is picked up and carried into the acid building on a wheelbarrow. The material is then dipped out into troughs where it is washed with water. After washing, the asbestos is just about pure white. It is placed into a press and as much water as possible is squeezed out. The asbestos is then placed on trays in a dryer on the second floor of the building. Up to this point, the material is too damp to cause any hazard. After drying, the asbestos is dumped on to a screen where it is rubbed by hand to break it up into fines. (By fines, I do not mean low micron size particles, but rather the conversion of lumps to smaller pieces). Considerable dust is generated at this process. The material of desired size is picked up by suction at the end of the screening process and carried first through a cyclone and then to a one-bag collector. The exhaust air from the cyclone goes to the bag collector. The collector bag is located right in the work room and has several holes in it. This means that any of the fine asbestos particles which are capable of escaping

the bag, must, of necessity, go right back to the workroom area. A small homemade fan is located above this process and does cause some exhaust. After the screening and collecting operations, the asbestos is emptied into large paper boxes. This emptying from the cyclone and bag collector causes considerable additional dust. The asbestos is then placed into smaller cardboard packing containers. It is necessary to tamp the asbestos down into these containers to get sufficient weight into them. This tamping process again causes additional dust. No hood has been supplied for this operation. Over a period of years, considerable asbestos dust has built up on the walls and ledges on the second floor of this building. Now, every time the wind blows through the area, a lot of the asbestos dust is blown into the air. The work area is in obvious need of clean up, and after the clean up an improved system of housekeeping, preferably by vacuum cleaner. The workers stated that approximately 1/2 of their time was spent in packing the asbestos into the containers. I did not actually observe this operation during the visit.

RS:ir

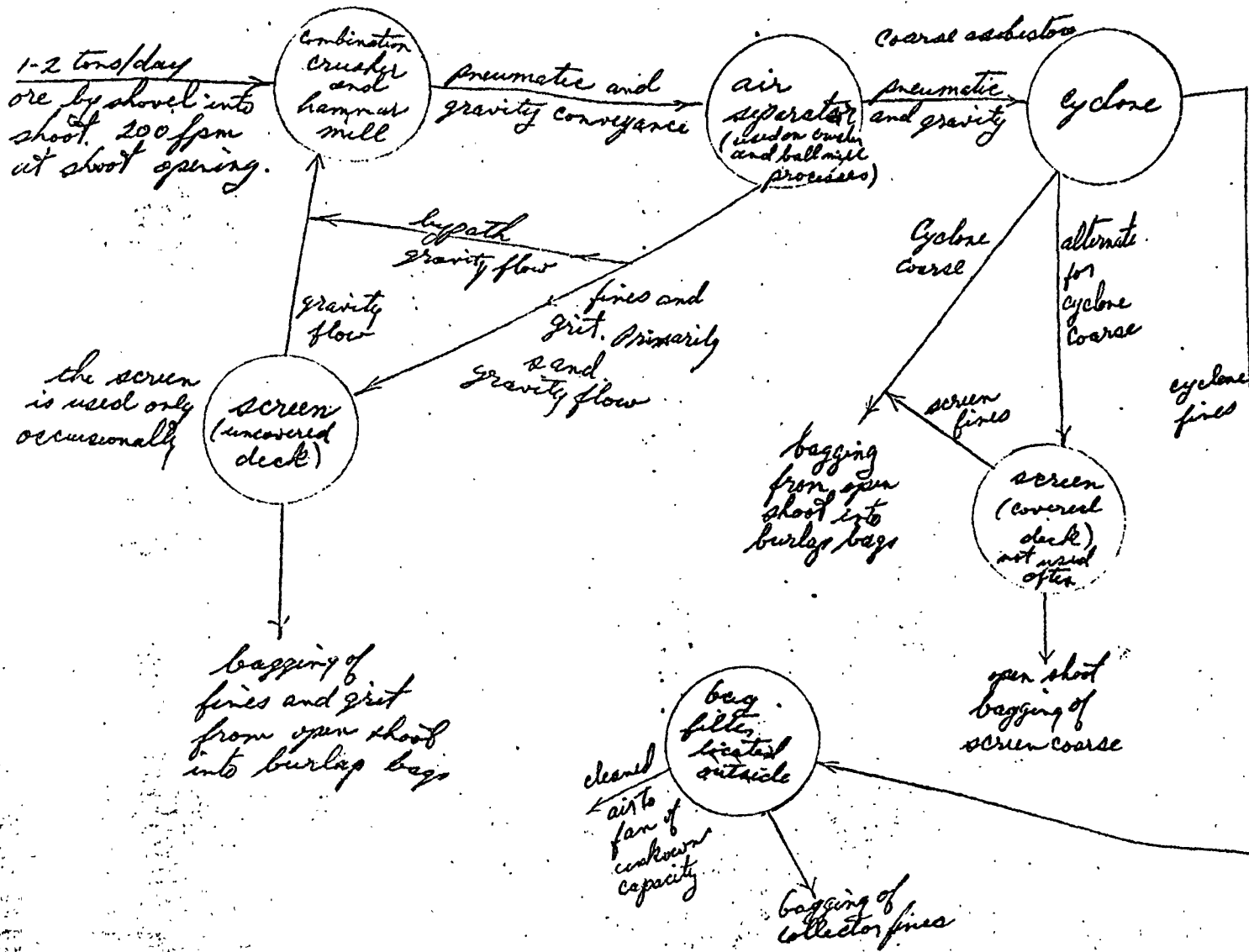
Ball Mill System

Powhattan 4-5-5.



Crusher System

Powhatan #5-54



MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION

RECORD OF INVESTIGATION OR SERVICE

Date 4/7/54 By R.S.

Plant Powhatan Mining Corp. Industry 7
Area Woodlawn (67th Winkon mill) County: Staff
Address Woodlawn (67th Winkon mill)
Number of Employees: Male 9 Female 2 Total 11

Purpose of Visit 1H

Persons Interviewed:

Reason:

No. involved

Mr. D. Smith
Foreman

Self initiated ☒
O. D. Report ☐

Survey ☐

Reinspection ☐

Complaint or Request ☐

Source:
Management ☐
Labor ☐
Neighbors ☐
Health Office ☐
Other ☐

☒ Study 9

Consultation ☐

Occupational Disease

Special Activity ☐

Project Activity ☐

Follow-up ☐

Recommendations Regarding Environmental Problems

Problems	Number Affected	Requested Improvement	Date
New			<u>Completed</u>
asbestos dust	9	recs 1 & 2 (cleanup and vac. chas.)	
" "	9	rec 3 fix duct & equip. leaks	
" "	9	rec 4 sealing & repairs on respirators - OK 9/27/54	
" "	1	better screen enclosure at crushing system - OK 9/27/54	
" "	2	recs 6 & 10 up vent on screening & packing - OK 9/27/54	
" "	2	rec 7 proper emptying of baghouse cyclone	
" "	2	rec 8 & 9 revamped bag collector & ref.	
Past - Completed			Made

Further suggested air goggles
guards on belt & hole in floor in refining building

Uncompleted: yes

Field Studies: Instrument Used No. Detn. No. Involved

Atmospheric Contaminants

Asbestos dust mid lnp 8 9

Physical Conditions

Samples submitted for analysis:

Next Visit 3 mos. 9/54

Reviewed R

that all workers are given pre-employment physicals by Dr. Armacost, located in room-lawn. Miss Kett does not know if the examination includes X-rays. The State Industrial Accident Commission is the carrier of the compensation.

Eight dust samples were taken during the operation of the crusher system, the ball mill system and the screening of refined asbestos. See the attached sheets for the results of these dust studies.

The Company is using a two-seater outhouse and pit privy for toilets. Both city and spring water are available for drinking and industrial operations. The two water systems are not inter-connected, and therefore, there is no cross connection. I checked with Mr. Vance Sullivan of the Baltimore County Health Office concerning Baltimore County's regulations on toilets. Mr. Sullivan informs me that pit privies, if in good sanitary condition, are considered satisfactory in Baltimore County.

During the running of the study, it became obvious that some dust was leaking into the room air from faulty patches on duct work in the various systems. It is essential that all of the duct work leaks be properly and permanently repaired. There is an in-draft at the charging point in the crusher system of 200 fpm. This controls the dust generated when the shovel is emptied into the chute. It does not, however, control any of the other dust generated during the shoveling operations. This opening is approximately one foot square. A rather poor homemade exhaust line has been run to the bagging operation of the crusher system. This line was clogged at the time of the visit so that no exhaust was present on the bagging operation. From the looks of the situation, I doubt that the ventilation would be effective.

Mr. Smith, the Foreman, stated that the tonnage the plant could produce would be approximately one to two tons per day from the crusher system and two to four tons per day from the ball mill system. The material is normally bagged in 100 lb. bags.

In the screening operation on the refined asbestos, I was informed by the operator that the cyclone is emptied approximately every 15 to 30 minutes. This created considerable dust in the area. It is necessary for the operator to poke a stick up into the cyclone to knock the material loose. If possible, a vibrator should be located on the cyclone and it should empty into a closed drum so that no dust can be produced and go into the room air. The emptying of the bag collector, which is on the pressure side of the blower, did not cause anywhere near as much dust as the emptying of the cyclone. This bag is emptied every hour to 1-1/2 hours.

M.S.A. Dustfree respirators and clean filters are available to the workers. The Foreman reports, however, that the workers refuse to use the respirators. The Foreman himself, however, does generally wear the respirator when engaged in dustier operations. The Foreman has worked at the plant for approximately 6 years. He recently had a chest plate taken and the results were completely negative.

A safety hazard exists on the second floor of the asbestos refining building. There is an unguarded pulley belt which comes partially across one of the room doorways. This belt runs more or less in a vertical direction. The safety hazard exists both to the moving belt and to the hole in the floor which takes up about 1/2 of the doorway.

RS:ir

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp Date Collected 4/7/54
Sample Data Bottle A2 20 ml
time 10 minutes bottle factor = 0.101 cfm

Main screening the refined asbestos
(also included emptying of cyclone)

Remarks

Nature of Material dust steady sample
Analysis Desired dust count
Submitted by R. S. Date Received 4/7/54
Chemist R. S. Date Completed 4/8/54
Analytical Method microprojector & Dunn cell

24 mppcf

slide I

67

70

59

65

58

319

slide II

57

56

68

52

63

296

$$\begin{array}{r} 319 \\ - 296 \\ \hline 23 \\ \hline 2 \overline{) 615} \\ \underline{408} \\ 308 \end{array}$$

$$308 - (\text{blank}) = 308 - 8 = 300$$

$$\text{mg/sec} = \frac{300 \times 4000 \times 20 \text{ ml}}{10 \text{ min} \times 0.101 \text{ cfm} \times 10^5} = 24$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp. Date Collected 4/7/54
Sample Data batch A1 25 ml
10 minutes bottle factor 0.098 cfm

Main screening refined asbestos.
Calcs included emptying of cyclone and bag
collectors)

Remarks

Nature of Material

dust

Analysis Desired

count

Submitted by

R.S.

Date Received

4/7/54

Chemist

R.S.

Date Completed

4/8/54

Analytical Method

mic. proj. + drum cell

17 mg of

Slide I

35
32
35
38
30
170

Slide II

37
35
42
34
32
180

average = 175

175 - blank = 175 - 8 = 167

$$\text{mpcf} = \frac{167 \times 4000 \times 25 \text{ ml}}{10 \text{ min} \times 0.098 \times 10^6} = 17$$

Place Collected Powhattan Mining Corp. Date Collected 4/6/54
Sample Data bottle B9 top A8 bottom 30 ml
20 minutes bottle factor 0.101 cfm
Men shoveling into crusher and hammer mill

Remarks _____

Nature of Material dust

Analysis Desired count

Submitted by R.S. Date Received 4/6/54

Chemist R.S. Date Completed 4/8/54

Analytical Method mic. proj. + durom cell

7 mgpd

slide I

30
22
18
21
24
125

slide II

32
25
24
25
22
128

aver = 127 - 8 = 119

$$\text{mg ppcf} = \frac{119 \times 4000 \times 32 \text{ ml}}{20 \text{ min} \times 1.01 \text{ g/cc} \times 10^6} = 7$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp. Date Collected 4/7/54

Sample Data Bottle C-7 205 ml

Time - 20 minutes

20 ml

bottle factor = 0.100 cfm

Man shoveling into crusher + hammer mill

Remarks

Nature of Material dust

Analysis Desired Consist

Submitted by R.S.

Date Received 4/7/54

Chemist R.S.

Date Completed 4/8/54

Analytical Method mic proj + durom cell

5 mppcf

slide I

21
25
30
23
29

128

slide II

33
21
23
24
28

129

check
 $\uparrow$
 $corr = 129 - 8 = 121$

$$mgpcf = \frac{121 \times 4000 \times 20}{20 \text{ min} \times 0.100 \text{ gpc} \times 10^6} = 5$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp. Date Collected 4/7/54
Sample Data bottle A9 top B9 bottom 10 ml
10 min bottle factor = 0.102 cfm

Man bagging from ball mill

Remarks

Nature of Material dust

Analysis Desired Asbestos

Submitted by R. L.

Date Received 4/7/54

Chemist R. L.

Date Completed 4/8/54

Analytical Method mic prep + duma cell

3 mppsf

slide I

15
19
17
25
21

97

slide II

13
24
24
16
17

94

$$\text{aver} = 96 - \overset{\text{blank}}{\underset{\uparrow}{8}} = 98$$

$$\text{m.p.d.f} = \frac{88 \times 4000 \times 10 \text{ ml}}{10 \text{ min} \times 1024 \text{ cm} \times 10^6} = 3$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhatan Mining Corp. Date Collected 4/7/54
Sample Data bottle A-5 10 ml
Time 13 minutes bottle factor 0.098

Men shovelling into Ball mill

Remarks

Nature of Material dust

Analysis Desired count

Submitted by R.S.

Date Received 4/7/54

Chemist R.S.

Date Completed 4/8/54

Analytical Method mic proj + dnm cell

0.8 mppcf

Slide I

$$\begin{array}{r} 8 \\ 11 \\ 5 \\ 6 \\ 7 \\ \hline 37 \end{array}$$

Slide II

$$\begin{array}{r} 7 \\ 4 \\ 5 \\ 6 \\ 5 \\ \hline 27 \end{array}$$

blank
↑

$$\text{aver} = 32 - 8 = 24$$

$$- \text{mgpc} = \frac{24 \times 4000 \times 10 \text{ ml}}{13 \text{ min} \times 0.098 \text{ gpc} \times 10^6} = 0.8$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp. Date Collected 4/7/54
Sample Data 10 ml
1.5 min bottle factor - 0.098 cfm

Men bagging from crusher-hammer mill
system

Remarks The screen by the bagging operation was
not used

Nature of Material dust

Analysis Desired count

Submitted by R. L.

Date Received 4/7/54

Chemist R. L.

Date Completed 4/8/54

Analytical Method mic. proj + durometer cell

1.3 mppcf

Slide I

$$\begin{array}{r} 8 \\ 12 \\ 10 \\ 15 \\ 11 \\ \hline 56 \end{array}$$

Slide II

$$\begin{array}{r} 13 \\ 9 \\ 10 \\ 7 \\ 14 \\ \hline 53 \end{array}$$

↑ blank

$$- \text{avg} = 55 - 8 = 47$$

$$\text{mpscf} = \frac{47 \times 4000 \times 10}{15 \times 0.098 \times 10^6} = 1.3$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhatan Men Date Collected 4/7/54

Sample Data bottle³ 8 20 min

10 cc

bottle factor 0.098

Man bagging from crusher - Hammer
mill system

Remarks screen by bagging operation was not in use

Nature of Material dust

Analysis Desired count

Submitted by R.S. Date Received 4/7/54

Chemist R.S. Date Completed 4/8/54

Analytical Method mic proj + dunn cell

1.5 mppscb

total dust < 10 microns

Slide I

17
20
16
16
14

83

Slide II

12
19
19
15
13

aver = $81 - \overset{\text{blank}}{\underset{\uparrow}{8}} = 73$

$$\text{mgpcf} = \frac{73 \times 4000 \times 10 \text{ ml.}}{20 \text{ mm} \times 0.098 \text{ cfm} \times 106} = 1.5$$

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION
W. F. Reindollar, Sc.D., Chief

Place Collected Powhattan Mining Corp. Date Collected 4/7/54

Sample Data Little A3
Dust Study

Blank

Remarks

Nature of Material blank for dust study

Analysis Desired count

Submitted by R.S. Date Received 4/7/54

Chemist R.S. Date Completed 4/8/54

Analytical Method mic. proj. + drum cell

slide I

$$\begin{array}{r} 5 \\ 3 \\ 2 \\ 0 \\ 0 \\ \hline 10 \end{array}$$

slide II

$$\begin{array}{r} 0 \\ 2 \\ 1 \\ 2 \\ 1 \\ \hline 6 \end{array}$$

I-H.I

avg blank total = 8

I-H.I

L^u 1 0 5

<u>Operation</u>	<u>* mppcf</u>
Screening refined asbestos	24
" " "	17
Shoveling ore into the crusher system	7
" " " " " "	5
Bagging the crusher system product	1.3
" " " " " "	1.5
Shoveling ore into the ball mill	0.8
Bagging the ball mill system product	3

* ~~all~~ mppcf - millions of particles of dust between 0.75 and 10 microns in diameter per cubic foot of air.

May 5, 1954

Extra Copy

To: Powhattan Mining Corporation
Woodlawn, Maryland

From: Maryland State Health Department
Division of Industrial Health and Air Pollution

Subject: Industrial Health Inspection and Dust Studies Made
at the Company's Plant on April 5 and 7, 1954.

On April 5, 1954 an industrial health inspection was made of the Company's Woodlawn plant by Mr. Raymond Smith, Division Engineer. This inspection was followed by a dust study which was made on April 7, 1954. Both the inspection and the dust study covered the grinding and refining operations.

Housekeeping in the plant was at best fair. While the aisles and some working areas were comparatively free of asbestos dust, considerable amounts of this material had accumulated on the walls and horizontal ledges, rafters, etc. In addition to this, dust spillage from the various processes, particularly in the basement area of the grinding plant had not been cleaned up. The end result of this faulty housekeeping must be more asbestos dust in the air. The Division recommends that all deposits of asbestos dust on the walls, horizontal ledges, overhead equipment and floors in both the grinding and refining plants be cleaned up immediately. We further recommend that the Company establish a definite clean up program aimed at preventing the accumulation of dust on the aforementioned areas.

The Company is at present employing dry sweeping as a means of removing dust from floors and aisles. Dry sweeping, as necessity, creates considerable dust and therefore, intensifies the worker's exposure. The Division recommends that one or more industrial type vacuum cleaners be purchased and employed in the Company's housekeeping program.

As was previously mentioned, at least some of the dust which must be cleaned up has resulted from leaks in the process equipment. In addition to the existing

leaks, there is evidence of old equipment leaks which have been repaired in a rather temporary manner. These conditions can only complicate the Company's housekeeping endeavors and work to increase the worker's exposure to asbestos dust. The Division recommends that all present leaks in the equipment be repaired immediately and that the worn section of ducts and chutes, at present repaired in a temporary manner, should be replaced.

The Company has supplied its workers with approved type respirator for use under unusually dusty conditions. Such respirators provide a useful means of protection to the worker in situations where more positive means of controlling the dust are impractical or as a temporary stop-gap protective device until more positive means of control has been installed. It was observed in this plant, however, that the workers do not use their respirators. This is primarily a matter of supervision. It is the Division's hope that conditions within the plant will be such that respirators are seldom, if ever, needed. It is nevertheless the supervisor's responsibility to see to it that the men are wearing their respirators on dusty jobs where no appropriate control of the dust has been provided. The Division recommends that the Company adopt a firm policy on the use of respirators. This policy should be backed up by appropriate supervision.

In addition to the general conditions discussed above, the Division's attention was called by the dust study to certain specific operations. The following table lists the dust concentrations found in the air at various process operations:

Operation	Concentration (mppcf*)
Screening refined asbestos	24
" " " " " "	17
Shoveling ore into the crusher system	7
" " " " " "	5
Bagging the crusher system product	1.3
" " " " " "	1.5
Shoveling ore into the ball mill	0.8
Bagging the ball mill system product	3

*mppcf - millions of particles of dust between 0.75 and 10 microns in diameter per cubic foot of air.

The generally accepted maximum allowable count of asbestos particles is 5 mppcf.

From the above table, it can be seen that the exposure of the man shoveling ore into the crusher system is just about at the maximum which this Division would accept. It is our opinion that the carrying out of our recommendations concerning housekeeping and the repair of dust leaks will bring this man's exposure well below 5 mppcf. We would further recommend that the screening operation, located immediately above this work position, be better enclosed so that less dust ^{will} escape to the air when the screen is vibrated.

The exposure of the man who screens the refined asbestos is considerably above that which this Division would allow. The screening operation studied really consisted of the rubbing of the large asbestos lumps on the screen, the emptying of the cyclone collector and the emptying of the bag collector. As mentioned previously, this area is in need of a thorough clean up. In addition to this, however, it will be necessary for the Company to make certain mechanical changes and install some local exhaust equipment if the man's exposure is to be brought below 5 mppcf. The Division recommends that the screens be enclosed within an exhaust ventilated booth. The air velocity at the face of this booth should be a minimum of 150 feet per minute. The air exhausted is not to be discharged back into the workroom but must be carried to a point outside of the building. The air may of course be clean so that the asbestos dust may be recovered before its discharge. It is recommended that the cyclone dust collector at present used in this area be altered so that it discharges through a closed connection into a sealed container. The present method of dropping the collected dust into an open container creates considerable quantities of dust within the room area. An alternate to this

suggestion is to enclose the emptying operation within the confines of an exhaust ventilated hood such as that recommended for the screening operation.

The present bag collector used in the area is in a bad state of repair. Many holes exist in this bag which allow some dust to re-enter the workroom air. In addition to this, a certain amount of fine dust will always penetrate the pores of the bag. It is recommended that the present bag be replaced by one in a good state of repair. It is further recommended that the bag be enclosed within a housing so that the air cannot be exhausted back into the room proper. The discharged air from this bag collector must be discharged outside of the building.

The present location of the fan used to suck air through the bag collector and cyclone collector is such that a portion of the dust work and the bag collector are under position pressure. Should leaks occur in the positive pressure part of the system, dust from within the ducts will be forced out into the room. The Division recommends that the position of the fan be changed so that the enclosed bag collector recommended previously and as much as the duct as is possible will be under negative pressure.

It is our understanding that considerable dust is generated during the tamping necessary to force a sufficient weight of asbestos into the small cardboard containers used for the refined asbestos. It is recommended that either a larger container which will require no tamping be used or preferably, that the loading operation be performed within the confines of an exhaust ventilated hood having a minimum face air velocity of 150 feet per minute. Such a hood need only be of sufficient size so that the work and the workers' hands can be contained within its confines.

The Division would like to call to the Company's attention two safety hazards observed in the refining area. The workers have not been provided with acid type goggles or face shield. This means that when they handle the acids, there is con-

siderable danger of eye injury due to splashing. We suggest that the workers be provided with eye protection of an appropriate type. An unguarded belt blocks off part of the doorway between the screening and packing room on the upper floor of the refined asbestos building. It is suggested that this belt and the hole in the floor for it be enclosed.

It is our present hope to revisit this plant within the next three months to ascertain the extent of the compliance with the above recommendations. If we can be of any assistance to your firm, or if there is any question concerning the above recommendations, please feel free to call upon us.

SUMMARY OF RECOMMENDATIONS

It is recommended that:

1. Both the grinding and refining plants be given a complete clean-up period. All dust deposits should be removed from floors, aisles, machinery, ledges and horizontal surfaces, ^{and} also walls. After the completion of the present clean-up, the Company should establish a definite schedule aimed at keeping the aforementioned areas free of dust.
2. Industrial type vacuum cleaners should be used for removing dust deposits instead of dry sweeping.
3. All dust leaks from ducts and equipment should be repaired in a permanent fashion.
4. The Company adopt a firm policy on the wearing of respirators and back it up by appropriate supervision.
5. The screen immediately adjacent to the location at which ore is shoveled into the crusher should be enclosed in a more dust-tight fashion.
6. The refined asbestos screening operation should be enclosed in an exhaust ventilated booth, having a minimum face velocity of 150 feet per minute. The air exhausted from this booth should not be returned to the room.

7. The cyclone be emptied into a sealed container in such a manner that dust is not generated into the workroom area.
8. The present bag on the bag collector be replaced by a new bag which is to be enclosed in such a fashion that the air will not be discharged into the workroom proper.
9. The position of the fan be changed so that the bag collector and as much of the duct work as possible be under negative pressure. The air from this fan should be discharged outside of the building.
10. Larger containers be used for packaging the refined asbestos so that the tamping can be eliminated or preferably that the operation be performed within the confines of an exhaust ventilated booth having a minimum face velocity of 150 ft. per minute.

It is furthermore suggested that those people who work with acid be supplied with acid type goggles and that the unguarded belt and hole located at the doorway between the refining ^{area} screen and packaging ^{area} be equipped with a guard.

May 5, 1954

To: Powhattan Mining Corporation
Woodlawn, Maryland

From: Maryland State Health Department
Division of Industrial Health and Air Pollution

Subject: Industrial Health Inspection and Dust Studies Made
at the Company's Plant on April 5 and 7, 1954.

On April 5, 1954, an industrial health inspection was made of the Company's Woodlawn plant by Mr. Raymond Smith, Division Engineer. This inspection was followed by a dust study which was made on April 7, 1954. Both the inspection and the dust study covered the grinding and refining operations.

Housekeeping in the plant was at best fair. While the aisles and some working areas were comparatively free of asbestos dust, considerable amounts of this material had accumulated on the walls and horizontal ledges, rafters, etc. In addition to this, dust spillage from the various processes, particularly in the basement area of the grinding plant had not been cleaned up. The end result of this faulty housekeeping must be more asbestos dust in the air. The Division recommends that all deposits of asbestos dust on the walls, horizontal ledges, overhead equipment and floors in both the grinding and refining plants be cleaned up immediately. We further recommend that the Company establish a definite clean up program aimed at preventing the accumulation of dust on the aforementioned areas.

The Company is at present employing dry sweeping as a means of removing dust from floors and aisles. Dry sweeping, ^{of} as necessity, creates considerable dust and therefore intensifies the worker's exposure. The Division recommends that one or more industrial type vacuum cleaners be purchased and employed in the Company's housekeeping program.

As was previously mentioned, at least some of the dust which must be cleaned up has resulted from leaks in the process equipment. In addition to the existing

leaks, there is evidence of old equipment leaks which have been repaired in a rather temporary manner. These conditions can only complicate the Company's housekeeping endeavors and work to increase the worker's exposure to asbestos dust. The Division recommends that all present leaks in the equipment be repaired immediately and that the worn section of ducts and chutes, at present repaired in a temporary manner, should be replaced.

The Company has supplied its workers with approved type respirator for use under unusually dusty conditions. Such respirators provide a useful means of protection to the worker in situations where more positive means of controlling the dust are impractical or as a temporary stop-gap protective device until more positive means of control has been installed. It was observed in this plant, however, that the workers do not use their respirators. This is primarily a matter of supervision. It is the Division's hope that conditions within the plant will be such that respirators are seldom, if ever, needed. It is nevertheless the supervisor's responsibility to see to it that the men are wearing their respirators on dusty jobs where no appropriate control of the dust has been provided. The Division recommends that the Company adopt a firm policy on the use of respirators. This policy should be backed up by appropriate supervision.

In addition to the general conditions discussed above, the Division's attention was called by the dust study to certain specific operations. The following table lists the dust concentrations found in the air at various process operations:

<u>Operation</u>	<u>Concentration (mppcf*)</u>
Screening refined asbestos	24
" " " " " "	17
Shoveling ore into the crusher system	7
" " " " " "	5
Bagging the crusher system product	1.3
" " " " " "	1.5
Shoveling ore into the ball mill	0.8
Bagging the ball mill system product	3

*mppcf - millions of particles of dust between 0.75 and 10 microns in diameter per cubic foot of air.

The generally accepted maximum allowable count of asbestos particles is 5 mppcf.

From the above table, it can be seen that the exposure of the man shoveling ore into the crusher system is just about at the maximum which this Division would accept. It is our opinion that the carrying out of our recommendations concerning housekeeping and the repair of dust leaks will bring this man's exposure well below 5 mppcf. We would further recommend that the screening operation, located immediately above this work position, be better enclosed so that less dust ^{will} escape to the air when the screen is vibrated.

The exposure of the man who screens the refined asbestos is considerably above that which this Division would allow. The screening operation studied really consisted of the rubbing of the large asbestos lumps on the screen, the emptying of the cyclone collector and the emptying of the bag collector. As mentioned previously, this area is in need of a thorough clean up. In addition to this, however, it will be necessary for the Company to make certain mechanical changes and install some local exhaust equipment if the man's exposure is to be brought below 5 mppcf. The Division recommends that the screens be enclosed within an exhaust ventilated booth. The air velocity at the face of this booth should be a minimum of 150 feet per minute. The air exhausted is not to be discharged back into the workroom but must be carried to a point outside of the building. The air may of course be clean so that the asbestos dust may be recovered before its discharge. It is recommended that the cyclone dust collector at present used in this area be altered so that it discharges through a closed connection into a sealed container. The

present method of dropping the collected dust into an open container creates considerable quantities of dust within the room area. An alternate to this

suggestion is to enclose the emptying operation within the confines of an exhaust ventilated hood such as that recommended for the screening operation.

The present bag collector used in the area is in a bad state of repair. Many holes exist in this bag which allow some dust to re-enter the workroom air. In addition to this, a certain amount of fine dust will always penetrate the pores of the bag. It is recommended that the present bag be replaced by one in a good state of repair. It is further recommended that the bag be enclosed within a housing so that the air cannot be exhausted back into the room proper. The discharged air from this bag collector must be discharged outside of the building.

The present location of the fan used to suck air through the bag collector and cyclone collector is such that a portion of the duct work and the bag collector are under position pressure. Should leaks occur in the positive pressure part of the system, dust from within the ducts will be forced out into the room. The Division recommends that the position of the fan be changed so that the enclosed bag collector recommended previously and as much as the duct as is possible will be under negative pressure.

It is our understanding that considerable dust is generated during the tamping necessary to force a sufficient weight of asbestos into the small cardboard containers used for the refined asbestos. It is recommended that either a larger container which will require no tamping be used or preferably, that the loading operation be performed within the confines of an exhaust ventilated hood having a minimum face air velocity of 150 feet per minute. Such a hood need only be of sufficient size so that the work and the workers' hands can be contained within its confines.

The Division would like to call to the Company's attention two safety hazards observed in the refining area. The workers have not been provided with acid type goggles or face shield. This means that when they handle the acids, there is con-

siderable danger of eye injury due to splashing. We suggest that the workers be provided with eye protection of an appropriate type. An unguarded belt blocks off part of the doorway between the screening and packing room on the upper floor of the refined asbestos building. It is suggested that this belt and the hole in the floor for it be enclosed.

It is our present hope to revisit this plant within the next three months to ascertain the extent of the compliance with the above recommendations. If we can be of any assistance to your firm, or if there is any question concerning the above recommendations, please feel free to call upon us.

SUMMARY OF RECOMMENDATIONS

It is recommended that:

1. Both the grinding and refining plants be given a complete clean-up. All dust deposits should be removed from floors, aisles, machinery, ledges and horizontal surfaces, ~~also~~ ^{and} walls. After the completion of the present clean-up, the Company should establish a definite schedule aimed at keeping the aforementioned areas free of dust.
2. Industrial type vacuum cleaners should be used for removing dust deposits instead of dry sweeping.
3. All dust leaks from ducts and equipment should be repaired in a permanent fashion.
4. The Company adopt a firm policy on the wearing of respirators and back it up by appropriate supervision.
5. The screen immediately adjacent to the location at which ore is shoveled into the crusher should be enclosed in a more dust type fashion.
6. The refined asbestos screening operation should be enclosed in an exhaust ventilated booth, having a minimum face velocity of 150 feet per minute.

The air exhausted from this booth should not be returned to the room.

7. The cyclone be emptied into a sealed container in such a manner that dust is not generated into the workroom area.

8. The present bag on the bag collector be replaced by a new bag which is to be enclosed in such a fashion that the air will not be discharged into the workroom proper.

9. The position of the fan be changed so that the bag collector and as much of the duct work as possible be under negative pressure. The air from this fan should be discharged outside of the building.

10. Larger containers be used for packaging the refined asbestos so that the tamping can be eliminated or preferably that the operation be performed within the confines of an exhaust ventilated booth having a minimum face velocity of 150 ft. per minute.

It is furthermore suggested that those people who work with acid be supplied with acid type goggles and that the unguarded belt and hole located at the doorway between the refining ^{area} screen and packaging ^{room} be equipped with a guard.

May 7, 1954

Mr. Fred A. Mett
Powhattan Mining Corporation
6721 Windsor Hill Road
Baltimore-7, Maryland

Dear Mr. Mett:

Enclosed is our report of the industrial health visit made to the Powhattan Mining Corporation. If there are any questions concerning it, please let us know.

Return visits will be made from time to time. If, at any time, we can be of service in regard to health hazards and problems in your plant, do not hesitate to call on us.

Thank you for the courtesies shown us during our visit.

Very truly yours,

Wm. F. Reindollar, Sc.D., Chief
Division of Industrial Health
and Air Pollution

WFR:ir

MARYLAND STATE DEPARTMENT OF HEALTH
DIVISION OF INDUSTRIAL HEALTH AND AIR POLLUTION

RECORD OF INVESTIGATION OR SERVICE

Date 9/27/54 By R.S.

Plant Area Powhatan Mining Corp. Industry 2
Address Woodlawn County: Balto
Number of Employees: Male 9 Female 2 Total 11

Purpose of Visit 14

Persons Interviewed:

Reason:

No. involved

M. D. Smith

Self initiated ☒

O. D. Report ☐

Survey ☐

Reinspection ☐

Study ☐

Consultation ☐

Special Activity ☐

Project Activity ☐

☒ Follow-up 9

Occupational Disease

Complaint or Request ☐

Source:

Management ☐

Labor ☐

Neighbors ☐

Health Office ☐

Other ☐

Recommendations Regarding Environmental Problems

Problems	Number Affected	Requested Improvement	Date Completed
New			
Past - Completed			Made
asbestos dust	9	Policy on respirators	4/7/54
" "	1	screen enclosure	4/7/54
" "	2	Bth on refined screening and packaging	4/7/54
Uncompleted:	yes (6)		

Field Studies:

Instrument Used

No. Detn.

No. Involved

Atmospheric Contaminants

Physical Conditions

Samples submitted for analysis:

Next Visit

Reviewed

Jan 1955 (stated in letter F.V.)

ventilation has now been provided at the asbestos screen. The ventilation is at both the top and bottom of the screen and appeared to be quite effective in controlling the dust. Inasmuch as my velometer was broken at the time, I was unable to make readings of the velocities. The biggest problem in this area was the fact that no effort has been made at house cleaning. Mr. Smith says they still intend to house clean the area and are getting a vacuum cleaner for this purpose. A flexible duct with an end hood has been run over to the place where the refined asbestos is packaged. This certainly gives better control of this operation. The containers used are also of a larger size so that less difficulty is experienced in getting the proper weight of asbestos into the container. The bag collectors are still inside the room and under positive pressure. This violates our recommendations on this matter. No change has as yet been made at the cyclone in the area, but Mr. Smith also informed me that this problem would be corrected in the near future.

to be

The driers which are ultimately installed for drying the asbestos ore as received has not yet been placed in operation. The Company is still working on this problem and expects to do something about it in the reasonably near future.

Men on the grinding side of the plant were found to be wearing their respirators whenever doing dusty work. Hoods are to go over the bins from which the asbestos ore is shoveled into a grinding system. The screens appeared to be closely covered. Almost all of the ground asbestos now goes to the bagger located in the basement. Some is caught upstairs but this is then dumped down a chute to the hopper which feeds the basement bagger. The Company is going to switch from the present fabric bags to paper bags in the near future inasmuch as their customers request such a change. This will definitely lessen the dust conditions.

A quick run-down of the status of our recommendations is as follows:

1. Re: House cleaning. The house cleaning has not been materially improved in the refining side of the plant. Some house cleaning has been placed in effect in the grinding area, but it still leaves much to be desired.
2. Industrial type vacuum cleaners. Industrial type vacuum cleaners have not been obtained yet but are supposedly on order.
3. Preparing dust leaks. There is some evidence that dust leaks have been repaired but there are still plenty of dust leaks in need of repair.
4. Re: The Company's attitude on respirators - The men are now wearing their respirators when needed, and Mr. Smith informs me that they can be fired for failing to wear their respirators.
5. Re: Closing the screen immediately adjacent to the spot where ore is shoveled into the crusher - The Company is putting in automatic heaters and a closed system. *filters*
6. Re: Provision of local exhaust ventilation in the refined asbestos screening - Local exhaust ventilation has been placed in effect at this operation.
7. Re: Emptying the cyclone into a sealed container - Nothing has been done on this, but Mr. Smith states that it will be corrected.
8. Re: The bag collector in the refining area - Nothing has been done on this recommendation.
9. The position of the fan in relation to having positive or negative pressure on the duct work - Nothing has been done on this matter or the discharge of the exhaust air from the fan to the outside.

Powhattan Mining Corporation

Sept. 27, 1954 T.S.

10. Re: Containers used for packing the refined asbestos and provision of exhaust ventilation - Some provision for exhaust ventilation has been made for this packing operation.

RS:ir

November 4, 1954

Mr. Fred A. Mett
Pownatgan Mining Corporation
6721 Windsor Mill Road
Baltimore-7, Maryland

Dear Mr. Mett:

Thank you for the courtesies extended to Mr. Raymond Smith of this Division on his September 27, 1954 visit to your plant. This visit was made to ascertain the extent of your Company's compliance with recommendations made in the Division's report of May 5, 1954.

Mr. Smith informs me that some work has been done to alleviate the dust conditions in your plant. We were particularly pleased to find that you have provided local exhaust ventilation at the refined asbestos screening operation. As you are aware, this was the dustiest operation studied. We further feel that your changes in the grinding process have helped to lower dust conditions in this area.

As you are well aware, our report of May 5, 1954 contained a total of ten recommendations. We feel that the work so far completed has placed your Company in compliance with recommendations Nos. 4, 5, 6, and 10. It is still the opinion of this Division that the provision of healthful working conditions in your plant is dependent on the completion of the other six recommendations. For your convenience, let me again itemize them:

Recommendation No. 1. - "Both the grinding and refining plants be given a complete clean-up. All dust deposits should be removed from floors, aisles, machinery, ledges, and horizontal surfaces and walls. After the completion of the present clean-up, the Company should establish a definite schedule aimed at keeping the aforementioned areas free of dust."

Recommendation No. 2. - "Industrial type vacuum cleaners should be used for removing dust deposits instead of dry sweeping."

Recommendation No. 3 - "All dust leaks from ducts and equipment should be repaired in a permanent fashion."

Recommendation No. 7 - "The cyclone be emptied into a sealed container in such a manner that dust is not generated into the work room area."

Recommendation No. 8 - "The present bag on the bag collector be replaced by a new bag which is to be enclosed in such fashion that the air will not be discharged into the work room proper."

Recommendation No. 9 - "The position of the fan be changed so that the bag collector and as much of the duct work as possible be under negative pressure. The air from this fan should be discharged outside of the building."

This Division will reinspect your plant during January of 1954. It is our hope that at this time we will find the above recommendations to have been carried out. If we can be of any assistance to you, please feel free to call upon us.

Very truly yours,

Wm. F. Reindollar, Sc.D., Chief
Division of Industrial Health
and Air Pollution

WFR:ir