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ROGERS CORPORATION
FIBERLOYS DIVISION
ROGERS, CONNECTICUT

ROGERS CORPORATION
FIBERLOYS DIVISION
ROGERS, CONNECTICUT

ASBESTOS DUST-IN-AIR SURVEY

On November 9 and 10, 1972, a team of specialists Redacted conducted an evaluation of the asbestos exposure in the Fiberloys Division, using a mobile laboratory. This evaluation consisted of air sampling for asbestos dust, respiratory function studies on exposed employees, and meetings with management in order to aid your organization in complying with the Asbestos Standard established by the Occupational Safety and Health Act.

We took twelve personal and general room air samples in this Division, and performed 113 respiratory function examinations in our mobile laboratory. The results of our dust sampling were reviewed at the plant during the course of our management conference on November 10, 1972.

Conclusions and recommendations in this report are based on the results of the sampling, and on personal observations.

CONCLUSIONS

1. The ceiling Threshold Limit Value of 10 fibers/cc was exceeded in three of the twelve samples collected. All three of these samples were obtained in the Beater Room.

2. The current time-weighted average Threshold Limit Value of 5 fibers/cc was apparently exceeded in two additional samples obtained in the Beater Room.

3. The 1976 proposed time-weighted average Threshold Limit Value of 2 fibers/cc was apparently also exceeded in the Beater Room.

4. Immediate engineering controls are indicated in the Beater Room in order to reduce asbestos dust concentrations below ceiling levels.

5. A respirator maintenance program should be implemented in the Beater Room in accordance with ANSI Standard Z88.2-1969.

6. A medical control program should be initiated for all new, current and terminating employees exposed to asbestos dust concentrations in excess of 1 fiber/cc, as recommended by the National Institute of Occupational Safety and Health in their Criteria document on asbestos.

Included for your further reference is a release entitled, "Asbestos Air Sampling and Analysis Technique".

Redacted

RGN/nw

12/26/72

RECOMMENDATIONS

1. If possible, asbestos fibers should be obtained in pulpable bags so that both the bag and its contents could be introduced into the process without the necessity of manually opening the bags.

2. If it is found that pulpable bags cannot be used, consideration should be given to providing local exhaust ventilation in the form of some type of side-draft or suspended hood at the beater, in an effort to capture and remove asbestos fibers at the source.

3. It would also be well to consider providing exhaust ventilation in the form of a semi-circular hood around the periphery of the waste drums into which the crushed, empty asbestos bags are deposited, if pulpable bags are not practical.

4. The cleaning and removal of dust would best be accomplished by vacuum cleaning rather than sweeping. Sweeping may generate hazardous dust concentrations.

5. Until engineering controls prove effective, respirators approved by the Bureau of Mines under Schedule 21B will have to be worn in areas where dust concentrations exceed the Threshold Limit Value.

6. A respirator maintenance program should be instituted in accordance with ANSI Z88.2-1969.

7. In areas where concentrations of asbestos fibers exceed 10 fibers/cc protective clothing is required. This protective clothing should consist of coveralls and head covering. Respirators are also needed in these areas.

8. Contaminated clothing must be placed in sealed containers for transfer and these containers must be marked with the asbestos warning sign.

9. The laundry facility must be notified if the clothing is contaminated with asbestos dust.

10. Employees who work in asbestos dust concentrations in excess of 10 fibers/cc must be provided with separate lockers for

street and work clothes. These lockers should be so arranged that street clothes do not become contaminated with asbestos dust.

11. Warning signs designed in conformance with the National Institute of Occupational Safety and Health should be posted throughout the plant where concentrations of asbestos dust exceed the Threshold Limit Value.

12. In areas where the Threshold Limit Value or ceiling levels may be exceeded, monitoring and evaluation must be performed every six months. This should be done by a properly trained individual.

13. All new employees and those transferred to areas exposed to air-borne concentrations of asbestos fibers should come under the requirements of the medical control program, namely:

a. Pre-placement physical examination within 30 days of the individual's first employment in an occupation exposed to air-borne concentrations of asbestos fibers.

b. 14 x 17 chest x-ray.

c. Respiratory system questionnaire.

d. Pulmonary function tests to include forced vital capacity and forced expiratory volume in one second.

It should be noted that any individual who indicates a history of respiratory disease such as asthma, bronchitis or emphysema should be carefully medically evaluated before job placement in an asbestos exposure area.

14. These same medical controls must be performed on all current employees working in these areas.

15. Physical examinations on exposed employees must be provided on a yearly basis.

16. Termination physical examinations must also be provided 30 days before or after termination of employment and should include all of the requirements of the medical control program.

DISCUSSION

The purpose of our survey was to aid you in complying with the asbestos standard which became effective on July 7, 1972. Air samples were taken to determine dust concentrations and respiratory function tests were performed to fulfill one part of the medical requirements.

The eventual goal of the asbestos standard is to reduce employee exposures to 2 fibers/cc of air for an eight hour working day. If possible, exposure should be reduced below this level.

We believe that through engineering controls asbestos dust concentrations in most of your plant can be reduced to levels below 2 fibers/cc, which is the proposed Threshold Limit Value for 1976.

BEATER ROOM:

Discussions at the plant have indicated that it was possible to obtain asbestos fibers in pulpable bags, permitting both the bag and its contents to be introduced into the process without the necessity of manually opening the bags. It is understood that the asbestos fibers, along with the bags containing them, would be introduced into a hydro-pulper and then to the beater at the proper time. This process would have the advantage of wetting the asbestos fibers before they were introduced to the beater, tending to reduce the amount of dry fibers which are now shaken loose during the manual handling operations.

If, for some reason, it is found that pulpable bags cannot be used, it might be possible to capture and remove the asbestos fibers generated during the manual operations by the introduction of some type of side-draft or suspended hood. For the greatest effect the bags should be open as close as possible to such a hood in order for the dust to be within the influence of air moving into the hoods. Considering that some asbestos fibers may be emitted into the work atmosphere as the bags are crushed and placed in the waste container, it might be possible to provide local exhaust ventilation and a semi-circular hood around the top circumference of the waste container, capturing and removing asbestos fibers from this potential source.

HOUSEKEEPING AND FLOOR CARE:

It appeared from observation that it was the practice of employees to use brooms to sweep up asbestos-containing scrap and waste. Vacuum cleaners or a central vacuum should be substituted for brooms to help avoid the unnecessary generation of dust into the work atmosphere. The cleaning of machines, equipment, and structural parts of the buildings should also be done by vacuuming for the same reason.

Another source of dust can be the portable vacuum cleaner itself if the exhaust port is not provided with an absolute filter. Unfortunately, the small respirable fibers can pass through a vacuum cleaner while the visible dust is trapped. The only way to insure that the vacuum cleaner is not itself presenting a hazard to the health of your employees is to have an absolute filter in the exhaust port. Needless to say, this filter needs to be replaced periodically.

RESPIRATORY PROTECTION:

All employees exposed to asbestos dust concentrations in excess of 2 fibers/cc should wear an approved respirator.

Employees should be instructed to replace their respirators whenever they become dirty. They should also be instructed not to leave respirators and other personal protective equipment in areas where they can become dirty from air-borne dust.

The use of plastic bags for protective equipment when it is not in use is an acceptable practice.

When the use of permanent type respirators is instituted, each employee should be issued his own respirator and instructed in its care. Each employee should also have a clean place in which to store his respirator and the respirators should be maintained in accordance with ANSI Z88.2-1969.

Each employee has the responsibility of using his respirator in accordance with the instructions and training he has received from management. Management has the responsibility to see that the respirators are used in accordance with this instruction and training. Each employee is responsible to guard against damage

~~to his respirator. If his respirator malfunctions or is damaged, it is the employee's responsibility to see that it is repaired~~ or replaced immediately.

For asbestos dust concentrations found in your plant, a respirator listed by the Bureau of Mines in the 21B Schedule is acceptable.

The employer is responsible for periodically inspecting the respirators of all employees for defects including a leak check. Respirators should be cleaned and disinfected on a regular basis and storage should be provided for each respirator.

PROTECTIVE CLOTHING:

In areas where concentrations of asbestos exceed 10 fibers/cc, protective clothing is required. The most important requirements are coveralls and head covering which should be provided for each employee.

Visitors and other personnel who enter areas where concentrations exceed 10 fibers/cc should also be wearing protective clothing and head covering. A disposable smock would appear to be sufficient for transient personnel.

LAUNDRY:

The laundry who washes the protective clothing must be notified in writing that the clothing is contaminated with asbestos. The laundering of contaminated clothing shall be done in such a manner as to prevent release of fibers into the atmosphere.

Soiled clothing for the laundry should be placed in plastic bags and sealed and labeled as containing asbestos. The appropriate warning signs should be prominently displayed.

LOCKER ROOMS:

~~It is the employer's responsibility to provide separate lockers for street and work clothes for all employees exposed to concentrations above the Threshold Limit Value. These lockers should be so arranged that street clothes are not contaminated with asbestos.~~

WARNING SIGNS:

Signs used to warn against the hazards of asbestos should include the design recommended by the National Institute of Occupational Safety and Health.

ASBESTOS SCRAP:

Asbestos scrap containers should be kept closed except when the material is being deposited. There appeared to be carelessness on the part of the employees in throwing scrap into these containers. This creates unnecessary dust and the practice should be eliminated.

When a waste container is filled, it should be sealed and made ready for disposal.

MONITORING PROGRAM:

In accordance with the law a regular monitoring program must be set up both to take air samples of the environment and to continue medical controls. At the time of the visit, we outlined methods of taking samples as well as the methods of analysis. It would be desirable to consider the purchase of the necessary monitoring equipment now so that as improvements are made air samples can be taken to determine their effectiveness.

Attached to the end of this report is a release entitled, "Asbestos Sampling Method and Analysis Technique".

MEDICAL CONTROLS:

As we discussed at the management conference, Redacted medical function is to assist you with the implementation of a medical control program and to provide you with the opportunity to complete the necessary pulmonary function tests.

ROGERS CORPORATION
FIBERLOYS DIVISION
ROGERS, CONNECTICUT

DATA

METHOD OF SAMPLING - 37 mm. Millipore Type AA filters.

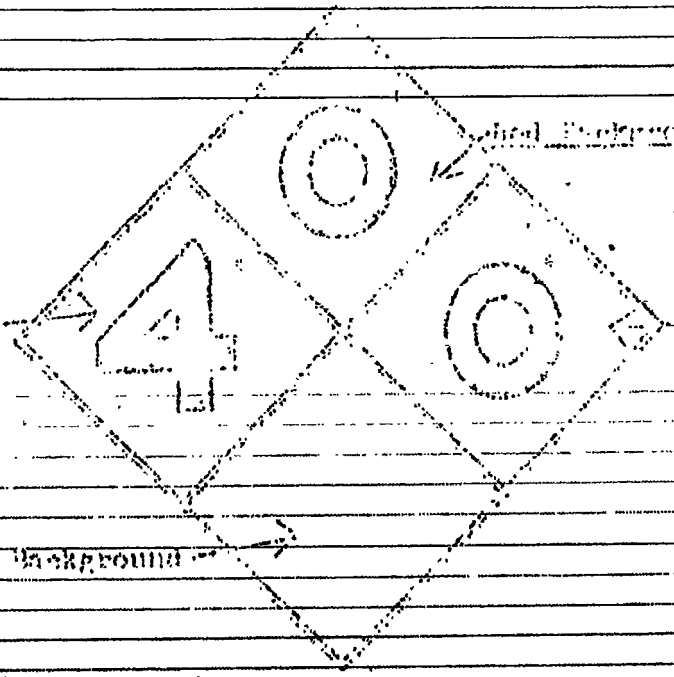
METHOD OF ANALYSIS - Counted, using phase contrast microscope.

SAMPLE NUMBER	LOCATION AND REMARKS	FIBERS/cc
272.	Breathing zone of operator at back end of calendar, Neil Hart, Finishing Room.	Trace
273.	Breathing zone of employee, Ted Billings, inspecting, stacking, and packaging sheets - Finishing Department.	Not Det.
274.	Breathing zone of operator at take-off end of dryer, Rene Grenier.	Not Det.
275.	Breathing zone of Beater Room employee, Francis Clements - adding asbestos to beater and cleaning up.	58
276.	Breathing zone of operator of under cut machine #851, R. Trobiak.	Trace
277.	General room sample across aisle from beater, in front of double sliding doors-Beater Room.	8.1
278.	General room sample near wall, across aisle from exhaust blower on top of dryer.	Trace
279.	Breathing zone of operator at feed end of dryer, Richard Frechette.	Not Det.
280.	Not used.	
281.	Used in Mektron Division	

SAMPLE NUMBER	LOCATION AND REMARKS	FIBERS/cc
283.	Used in Mektron Division	
284.	Breathing zone of Beater Room employee, Saul Ahola, adding asbestos to beater.	26.0
285.	Breathing zone of Beater Room employee, Saul Ahola, During hour's operation.	9.4
286.	Breathing zone of Beater Room employee Francis Clements, adding asbestos to beater.	4.2
287.	Not used.	
288.	Used in Mektron Division	
289.	Breathing zone of operator at feed end of calendar, Bill Skelley, Finishing Department.	Not Det.

FIGURE 3

ASBESTOS



DANGER: May Cause Delayed Lung Injury

(Asbestosis, Lung Cancer).

DO NOT BREATHE DUST

Use only with adequate ventilation and approved respiratory protective devices.

* Numbers are in black.

ASBESTOS AIR SAMPLING AND ANALYSIS TECHNIQUE

Introduction

The purposes of sampling an air-borne contaminant such as asbestos are to determine the time weighted average employee breathing zone exposure as well as to determine the sources of the exposure.

The employee exposure is determined by air samples taken near his breathing zone. Source exposures are determined in part by general room air samples taken near a suspected source.

The sampling equipment and analysis are the same in both cases.

Principles of Sampling

In order to collect a sample representative of air-borne dust, which is likely to enter the subject's respiratory system, it is necessary to position a collection apparatus near the nose and mouth of the subject or in his "breathing zone".

The concentration of dust in the air to which a worker is exposed will vary, depending upon the nature of the operation and upon the type of work performed by the operator and the position of the operator relative to the source of the dust. The amount of dust inhaled by a worker can vary daily, seasonally, and with

the weather. In order to obtain representative samples of workers' exposures, it is necessary to collect samples under varying conditions of weather, on different days, and at different times during a shift.

The percentage of working times spent on different tasks will affect the concentrations of dust the worker inhales since the different tasks usually result in exposure to different concentrations. The percentage can be determined from work schedules and by observation of work routines.

The daily average weighted exposure can be determined by using the following formula:

$$\frac{(\text{Hours X conc. Task A}) + (\text{Hours Y conc. Task B}) + (\text{etc.})}{8 \text{ hours (or actual hours worked)}} = \text{average concentration}$$

The concentration of any air contaminant resulting from an industrial operation also varies with time. Therefore, a longer sampling time will better approximate the actual average.

With the following recommended sampling procedure, it is possible to collect samples at the workers' breathing zone for periods from 4 to 8 hours, thus permitting the evaluation of average exposures for a half or full 8 hour shift -- a desirable and recommended procedure. Furthermore, dust exposures of a more

normal work pattern result from the use of personnel samplers. In evaluating daily exposures, samples should be collected as near as possible to the workers' breathing zone.

General room air samples should also be taken to identify sources of exposures as well as to determine the levels to which people passing through the area are exposed.

Necessary Equipment for Sampling

1. Sampling pump (preferably battery operated) with the capability drawing 1-2 liters per minute through a filter.

2. One hose approximately 2½ feet long.

3. One hose to filter adapter.

4. 37mm Millipore* type AA filters mounted in an open-face filter holder.

5. Timer.

Collecting the Sample

1. Check the sampling pump to be sure that it is operative and that the batteries have a sufficient charge for the anticipated sampling time.

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2. Connect the hose to the pump inlet.

3. Connect the other end of the hose to the filter hose adapter.

4. Remove red plug from filter holder assembly and attach adapter to the filter assembly.

5. Attach pump to belt of employee at hip and run hose over opposite shoulder.

6. Attach filter to employee's lapel. Be sure that the filter holder is not pointing upwards.

7. Remove clear plastic cover over filter (cover in which blue plug is inserted).

8. Turn on pump and timer. Adjust to desired air flow, usually 2 liters per minute.

9. While the sample is being taken, observe the worker to identify dust sources from his work practices or equipment.

10. After the sample has been collected, replace the filter cover and remove filter assembly from the hose adapter.

Sampling Time

The sampling time will be determined by dust concentrations in the air. High concentrations require a shorter sampling time.

A minimum sampling time of 15 minutes is required to determine

peak exposure levels to asbestos dust.

In order to determine average employee exposures sampling time should range from a minimum of 90 minutes at 2 liters per minute to a full 8 hours at 1 to 2 liters per minute.

Work schedules and previous sampling experience will dictate the best sampling times in each plant.

SAMPLE ANALYSIS

Mounting the Sample

The mounting medium used in this method is prepaired by dissolving 0.05 grams of membrane filter per milliliter of 1:1 solution of dimethyl phthalate and diethyl oxalate. The index of refraction of this medium thus prepared is ND = 1.47.

To prepair a sample for microscopic examination, a drop of the mounting medium is placed on a specially cleaned, standard (25mm x 75mm), microscopic slide. A wedge-shaped piece with arc length of about 1 centimeter is excised from the filter with a scapel and forceps and placed dust-side-up on the drop of the mounting solution. A number 1½ coverslip cleaned with lense tissue, is placed over the filter wedge. Slight pressure on the coverslip achieves contact between it and the mounting medium. The sample

may be examined as soon as the mount is transparent; however, a waiting time of at least 20 minutes is advisable.

The optical homogeneity of the resulting mount is nearly perfect, with only a slight background granularity under phase contrast, which disappears within one day. The sample should be counted within two days after mounting.

Evaluation of the Sample

The filter samples mounted in a manner described above are evaluated in terms of the concentration of asbestos fibers greater than 5 microns (micro meters) in length. A microscope equipped with phase-contrast optics with a four millimeter "high-dry" achromatic objective is suitable for this determination. 10X eye pieces, one of which contains a Porton or other suitable reticle at the level of the field-limiting diaphragm, should be used. The left half of the Porton reticle field serves to define the counting area of the field. Twenty fields located at random on the sample are counted and total asbestos fibers longer than 5 microns are recorded. Any particle having an aspect ratio of 3 or greater is considered a fiber.

The following formula is used to calculate the number of fibers per milliliter assuming the use of the millipore 37mm type AA filter, and the optics described above:

$$\frac{(\text{average number of fibers/field}) \quad (K)}{(\text{sampling rate in liters}) \times (\text{sampling time in minutes})} = \text{fibers/cc}$$

Where K = 171

If a different filter of optical system is used, $K = \frac{\text{Filter area (mm}^2\text{)}}{\text{Field area (mm}^2\text{)}} \Big/ 1{,}000$

As many fields as required to yield at least 100 fibers total count should be counted. In general, the minimum number of fields should be 20 and the maximum number 100.

There may be difficulty in counting a field containing over 20 fibers because in addition to the fibers being counted, there are also present a number of grains, which interfere with the accuracy of the count.

Calibration of Sampling Pumps

The accurate calibration of a sampling device is essential to the correct interpretation of an instrument's indication. The frequency of calibration is somewhat dependent on the use, care, and handling to which the pump is subjected. Pumps should be calibrated if they have been subjected to misuse or if they have just been repaired or received from a manufacturer. If hard usage is given the instrument, more frequent calibration may be necessary.

The use of an accurate rotometer should be sufficient to check the pump's calibration. To perform this calibration, the rotometer is placed in "free" air so that the air flow is first through the calibrating rotometer; second through the filter, and third through the pump rotometer and the pump itself. The filter should be prepared as described under sampling procedure. The rotometer will indicate the air flow to the line. The rotometer should have a range of 0.4 lpm to 4 lpm.

~~Ex 103~~
Ex 427

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. 2

Sample No. 148

Results f/cc 1.18

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D-3590

Location: Beater Room - Pulper

Date: 2/9/76

Time: Start 9:52

Time: End 10:30

Total Time: 38 minutes

Sampling Rate 2 l/min.

Sample Volume 76 liters

AREA [ ] Personal Sample [XXX] Name Edward Max

Conditions and Operations:

1. Loading Pulper -
   2 bags chrysotile
   12 bags crucidulite

2. Splash on cassette - avoid.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. Casella (045)

Sample No. 148Y

Results f/cc 2.05

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D3590

Location: Beater Room - Pulper

Date: 2/9/76

Time: Start 871^{45}

Time: End 895^{03}

Total Time: 23^{18} minutes

Sampling Rate 2 l/min.

Sample Volume 46.5 liters

AREA [ ] Personal Sample [XX] Name Judy Neal

Conditions and Operations:

1. Truck driver and helper.

2. Loading pulper during test.
   2 bags chrysotile
   12 bags crucidulite

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. Casella (045)

Sample No. 149Y

Results f/cc 0.10

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D-3102

Location: Calender Feeder

Date: 2/9/76

Time: Start 895^{03}

Time: End 950^{49}

Total Time: 55^{46} minutes

Sampling Rate 2 l/min.

Sample Volume 111.5 liters

AREA [ ] Personal Sample [XX] Name Norma Mooney

Conditions and Operations:

1. No Dust - Material well bound.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. 2

Sample No. 148

Results f/cc 1.18

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D-3590

Location: Beater Room - Pulper

Date: 2/9/76

Time: Start 9:52

Time: End 10:30

Total Time: 38 minutes

Sampling Rate 2 l/min.

Sample Volume 76 liters

AREA [ ] Personal Sample [XXX] Name Edward Max

Conditions and Operations:

1. Loading Pulper -
   2 bags chrysotile
   12 bags crucidulite

2. Splash on cassette - avoid.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. 2

Sample No. 149

Results f/cc 0.30

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: 3102

Location: Inspection

Date: 2/9/76

Time: Start 10:53

Time: End 11:49

Total Time: 56 minutes

Sampling Rate 2 l/min.

Sample Volume 112 liters

AREA [ ] Personal Sample [XX] Name Ted Billings

Conditions and Operations:

1. Well bound sheet.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys Division

Pump No. ?

Sample No. 110

Results f/cc .248

Date Counted

Survey for: (Type of Contaminant) Asbestos Crocidolite

Grade: - 3590

Location: Beater Room - Pulper

Date: May 30, 1975

Time: Start 1:15

Time: End 1:55

Total Time: 40 minutes

Sampling Rate 2 l/min.

Sample Volume liters

AREA [ ] Personal Sample [XXX] Name Ray Courtemanche

Conditions and Operations:

1. Furnished 12 bags crocidolite.
2. Let bag (plastic) go in pulper. Fish out with hook. Wash clean.
3. Bag (wet) placed in barrel for disposal.
4. Very careful not to get asbestos on floor.
5. Operators wet down floor before cleaning. Washed skid.
6. One cycle 1½ hours until next.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys Division

Pump No. 1

Sample No. 111

Results f/cc .229

Date Counted

Survey for: (Type of Contaminant) Asbestos-Crocidolite

Grade: - 3590

Location: Beater Room - Pulper Helper

Date: May 30, 1975

Time: Start 1:19

Time: End 1:59

Total Time: 40 minutes

Sampling Rate 2 l/min.

Sample Volume liters

AREA [ ] Personal Sample [XXX] Name Don Bliber

Conditions and Operations:

Same as Sample No. 110.

Tentative Recommendations:

INTRODUCTION

Two (2) airborne asbestos dust samples were taken by Mr. Edward J. Sweeney, Manager of Process Engineering of Rogers Corporation, Rogers, Connecticut. The samples labeled Numbers 65 and 66, were analyzed to determine the asbestos concentration in the sampled air.

RESULTS

The following pages include particle count data, and Rogers Corporation dust survey sheets. Analytical results are tabulated below:

Sample No.	Fibers/Field	Fibers/Filter	Liters Sampled	Fibers/cc
65	.40	61,071	58	1.05
66	.42	64,125	42	1.53

NOTE: Fibers counted are greater than 5 microns in length.

CALCULATION

A. $$F = \frac{(N_f)(A_f}{EFA}$$

where: F = Fraction of filter analyzed
N_f = Number of fields of view counted
A_f = Area of field (.0056 mm^2)
EFA = Effective filtration area in mm^2 (855 mm^2)

B. $$N_{tf} = \frac{N_c}{(F)(V)(1000)}$$

where: N_{tf} = Total number of fibers/cc of air
N_c = Number of fibers counted in N_c fields
V = Volume of air in liters

Roy S. Eggdall
Director-Environmental Sciences

[illegible] OF EXPOSURE DUST SURVEY

Dept. Fiberglas Division

Survey No. 2

Sample No. 65

Sampling L/cc 1.05

Date Counted 6/14/74

Survey for: (Type of Contaminant) Asbestos

Grade: 3590

Location: pulper

Sample No.

Time: Start 8:48

Time: End 9:17

Total Time: 29 minutes

Sampling Rate 2 l/min.

Sample Volume 58 liters

AREA [ ] Personal Sample [XX] Name James Larkin

Conditions and Operations:

1. [illegible] asbestos to pulper
   [illegible] of crocidolite - packed in plastic
   [illegible] asbestos #5 - pulpable
2. Operators wears mask.
3. Charges plastic bag and all, then pulls out the plastic.

Remarks: [illegible]

INDUSTRIAL HYGIENE DUST SURVEY

Plant: Fiberglas Division

DATE: June 6, 1974

Area No. 2

Sample No. 66

Results f/cc 1.53

Date Counted 6/14/74

Survey for: (Type of Dust Tested) Asbestos

Grinder: 3590

Location: Pulper

Sample No.

Time: Start 11:40 AM

Time: End 12:01 PM

Total Time: 21 minutes

Sampling Rate 2 l/min.

Sample Volume 42 liters

LRE: [ ] Personal Sample: [X]

Man James Larkin

Conditions and Operations:

1. Operations: Adding asbestos to pulper:
   1 bag crocidolite - plastic - opened
   2 bags paperbestos #5 - pulpable

2. Operator wears mask.

Remarks and Recommendations:

AIRBORNE ASBESTOS FIBER COUNT

FOR

ROGERS CORPORATION
ROGERS, CONNECTICUT

BY

YORK RESEARCH CORPORATION
ONE RESEARCH DRIVE
STAMFORD, CONNECTICUT 06906

Lagerberg 00509

INTRODUCTION

Five (5) airborne asbestos dust samples # 148, 148Y, 149, 149Y and blank were taken under the supervision of Mr. Edward J. Sweeney, Manager of Process Engineering of Rogers Corporation, Rogers, Connecticut. These samples were analyzed to determine the asbestos concentration in the sampled air.

RESULTS

The following pages include particle count data and Rogers Corporation dust survey sheets.

Analytical results are listed below:

Sample No.	Fibers/Field	Fibers/Filter	Liters Sampled	Fibers/cc
148	.64	89,705	76	1.18
148Y	.68	95,311	46.5	2.05
149	.24	33,639	112	0.30
149Y	.08	11,213	111.5	0.10
Blank	.00	0	0	0.00

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METHODOLOGY

Sample examination utilized phase contrast microscopy techniques and NIOSH procedures throughout. The counting field area was equivalent to 0.0061 mm^2. The optics consisted of a 45 x "phase" objective lens, a 10 x ocular lens and a Porton reticle.

Calculation of airborne concentration (asbestos fiber)

1. $C_1 = \frac{(F-B)(W)}{(A)(V)}$ 2. $C_2 = \frac{(F-B)(W)}{(A)}$

where: C_1 = airborne fiber concentration in fibers > 5 um/cm^3
C_2 = airborne fiber concentration in fibers >5 um/cm^3/filter
F = average fiber count in fibers > 5 um/field
B = average fiber count of blanks or control filters in fibers > 5 um/field
W = 855 mm^2 for 37 mm diameter filter (portion of effective filter mounted)
A = the area of the counting field of a calibration reticle expressed in mm^2/field
V = total air volume collected through filter expressed in milliliters

-from USPHS/NIOSH Membrane Filter Method '74

Prepared by: Douglas Newhard
Douglas Newhard
Environmental Biologist

Approved by: Ralph Wiech
Ralph Wiech
Manager Chemical Facilities

Tested By: Michael Horowitz
Michael Horowitz
Senior Chemist

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. 2

Sample No. 148

Results f/cc 1.18

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D-3590

Location: Beater Room - Pulper

Date: 2/9/76

Time: Start 9:52

Time: End 10:30

Total Time: 38 minutes

Sampling Rate 2 l/min.

Sample Volume 76 liters

AREA [ ] Personal Sample [XXX] Name Edward Max

Conditions and Operations:

1. Loading Pulper -
   2 bags chrysotile
   12 bags crucidulite

2. Splash on cassette - avoid.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. Casella (045)

Sample No. 148Y

Results f/cc 2.05

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D3590

Location: Beater Room - Pulper

Date: 2/9/76

Time: Start 871 45

Time: End 895 03

Total Time: 23 18 minutes

Sampling Rate 2 l/min.

Sample Volume 46.5 liters

AREA [ ] Personal Sample [XX] Name Judy Neal

Conditions and Operations:

1. Truck driver and helper.

2. Loading pulper during test.
   2 bags chrysotile
   12 bags crucidulite

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberloys

Pump No. 2

Sample No. 149

Results f/cc 0.30

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: 3102

Location: Inspection

Date: 2/9/76

Time: Start 10:53

Time: End 11:49

Total Time: 56 minutes

Sampling Rate 2 l/min.

Sample Volume 112 liters

AREA [ ] Personal Sample [XX] Name Ted Billings

Conditions and Operations:

1. Well bound sheet.

Tentative Recommendations:

ROGERS CORPORATION DUST SURVEY

Plant: Fiberlays

Pump No. Casella (045)

Sample No. 149Y

Results f/cc 0.10

Date Counted

Survey for: (Type of Contaminant) Asbestos

Grade: D-3102

Location: Calender Feeder

Date: 2/9/76

Time: Start 895^{03}

Time: End 950^{49}

Total Time: 55^{46} minutes

Sampling Rate 2 l/min.

Sample Volume 111.5 liters

AREA [ ] Personal Sample [XX] Name Norma Mooney

Conditions and Operations:

1. No Dust - Material well bound.

Tentative Recommendations: