

HEALTH HAZARD EVALUATION REPORT 72-24  
HAZARD EVALUATION SERVICES BRANCH  
DIVISION OF TECHNICAL SERVICES

Establishment: Filtering Materials Corporation  
Richmond, California

Report Prepared By: Melvin T. Okawa, Regional Industrial Hygienist  
Region IX, San Francisco, California

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH  
CINCINNATI, OHIO 45202

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HEALTH HAZARD EVALUATION REPORT 72-24  
FILTERING MATERIALS CORPORATION  
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SUMMARY DETERMINATION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 699(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health received such a request from an employer regarding exposure to asbestos dust at the Filtering Materials Corporation plant in Richmond, California.

Airborne asbestos fiber counts measured on three days April 13, 14, 28, 1972 at the Filtering Materials plant using both personnel and general area samplers did not exceed the emergency asbestos standard of 5.0 fibers per cubic centimeter of air greater than 5.0 micrometers in length (Federal Register, December 7, 1971, Part 1910, Volume 36, No. 235) promulgated by the U.S. Department of Labor to prevent asbestosis and asbestosis-induced neoplasms. The asbestos counts ranged from 0.04 to 3.78 fibers/cubic centimeter.

Since the emergency standard may be revised, general recommendations have been suggested to management to insure a healthful and safe work environment.

Copies of this Summary Determination as well as the Full Report of the evaluation are available from the Hazard Evaluation Services Branch, NIOSH, 550 Main Street, Cincinnati, Ohio 45202. Copies of both have been sent to:

- a) Filtering Materials Corporation, Richmond, California
- b) Authorized representative of employees
- c) U.S. Department of Labor - Region IX

For purposes of informing "affected employees," the employer will either (1) "post" the Summary Determination in a prominent place near where affected employees work for a period of 30 days or (2) provide a copy of the determination to each affected employee.

## I. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 699(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health received such a request from an employer at Filtering Materials Corporation, 860 South 19th Street, Richmond, California.

The Filtering Materials plant is a producer of liquid filtering materials for industrial use. Filters with varying percentages of asbestos and cellulose are cut into different patterns or sizes after preliminary processing and are packed for distribution.

## II. BACKGROUND HAZARD INFORMATION

### A. Standards

The occupational health emergency standard for asbestos as promulgated by the U.S. Department of Labor is applicable to this evaluation. The emergency standard was published in the Federal Register on December 7, 1971 (Part 1910, Volume 36, No. 235). The standard is no exposure shall exceed 5.0 fibers per cubic centimeter (cc) of air based on a count of fibers greater than 5 micrometers in length, determined as a time-weighted average exposure for an 8-hour work day, and no peak concentration of asbestos to which workers are exposed shall exceed 10.0 fibers/cc greater than 5 micrometers as determined by a minimum sampling time of 15 minutes.

### B. Toxic Effects

Prolonged inhalation of asbestos fibers may result in the production of a typical pulmonary fibrosis which may be accompanied by severe respiratory disability. If large quantities of the fibers are inhaled over a prolonged period of time, characteristically 10 to 20 years, tissue reaction progresses until a generalized, diffuse fibrosis becomes evident. This fibrosis is seen first in the lower lobes of the lungs but eventually, if exposure continues, appears in the other lobes as well. Respiratory insufficiency and cardiac failure may supervene.

### III. HEALTH HAZARD EVALUATION

#### A. Initial Visit - Observational Survey

The initial hazard evaluation survey of the Filtering Materials Corporation plant was made on April 13, 1972 by the National Institute for Occupational Safety and Health representative Mr. Melvin T. Okawa. The function of the National Institute for Occupational Safety and Health and its relation to Section 20(a)(6) of the Occupational Safety and Health Act of 1970 was explained to Mr. Richard Atwood, the Vice President of the company.

After completing the NSN Part I questionnaire with Mr. Atwood, he accompanied me through the manufacturing areas of the plant. All the operations are contained in one medium size building, and approximately 20 people are employed during three shifts.

##### Sparkolloid Area:

One small mixing operation is located in this area of the plant. Diatomaceous earth is combined with other materials to make a powdered filtering substance. The ingredients are loaded by hand into barrels and mixed by a machine which rotates them. During the hand loading and bagging sequences of the operation, dust can be generated.

##### Batching Area:

The first step in the filter manufacturing process takes place in this area of the plant. Raw cellulose and asbestos fibers are mixed in a large holding tank. Water, hydrochloric acid, and organic resins are added to the mix. This slurry is then pumped to the extractor machine. The asbestos portion of the solid fraction of the slurry ranges from 0 to 100 per cent.

##### Extractor:

The liquid portion of the slurry is removed by the extractor. At the same time, the solid portion is laid into sheets by the extractor and dried by flame heat. The sheets are cut and stacked in different sizes during the last step of the extractor operation.

#### Die Cutting:

The sheets of filter material are cut to customers' specifications by the "die cutter" who operates the die cutting machine manually. The machine is enclosed partially and local exhaust ventilation is available. After the filters are cut, they are inspected, branded, and packed for shipment.

#### Fiberizer:

The waste materials are reclaimed instead of being discarded. The waste asbestos filters are loaded manually into a fiberizer where they are shredded and loaded into sacks. The potential for excess airborne asbestos dust is greatest in the fiberizer area. The machine is run from 5 to 10 days per month. One worker operates the fiberizer and another one assists him by bagging the shredded material.

#### B. Environmental Survey

Two area and 28 personnel samples for asbestos were collected during the day shift on April 13, 14, and 28 of this year. Sampling times ranged from 15 minutes to 3 hours. The same instruments were used to collect the general area and breathing zone samples. MSA Model G battery operated pumps were used to draw air through 37-millimeter Millipore type AA filters at a rate of 2.0 liters per minute.

Results are reported in number of asbestos fibers per cubic centimeter of air based on a count of fibers greater than 5 micrometers in length. The asbestos counts are contained in Table I, and the employees are identified by occupation.

#### Results:

The asbestos counts ranged from 0.04 fibers/cc to 3.78 fibers/cc (see Table I). The highest counts were recorded in the breathing zone of the fiberizer operator where they ranged from 0.73 to 3.78 fibers/cc. The counts in the breathing zone of the fiberizer helper ranged from 0.38 to 3.42 fibers/cc. The asbestos counts of all the other personnel and general area samples did not exceed 2.0 fibers/cc, the majority of them being well below 1.0 fibers/cc.

#### IV. RECOMMENDATIONS

##### A. Sparkolloid Area:

Dust levels in this area did not seem excessive due to the periodic nature of the operation. However, certain precautions are warranted since diatomaceous earth is being handled. The "batchmaker" should wear an approved dust respirator while he works with the diatomaceous earth. Housekeeping in this area should be improved. Use of a vacuum cleaner instead of a broom is recommended for clean-up operations.

##### B. Filter Manufacturing:

Asbestos counts did not exceed the established standard of 5.0 fibers/cc. However, a change in this standard has been recommended by the National Institute for Occupational Safety and Health and it may be revised soon to 2.0 fibers/cc determined as a time-weighted average exposure for an 8-hour work day. Therefore, some general recommendations are made.

1. Asbestos counts in the fiberizer area were in excess of 2.0 fibers/cc and it is recommended that some changes in the operation be made. The fiberizer operation should be enclosed to confine the dust in one area of the plant. If feasible, some type of local exhaust ventilation system should be designed for the fiberizer. The fiberizer operator and his helper should wear approved respirators when working in this area. It is recommended that protective coveralls and hats be provided to these workers for use in the fiberizer area. The protective clothing should be vacuumed before removal and laundering services for soiled protective clothing should be provided.

2. It is recommended that a medical surveillance program be instituted at the plant. Guidelines for a medical surveillance program can be obtained from "criteria for a recommended standard... Occupational Exposure to Asbestos," DHEW Publication HSM 72-10267.

3. Housekeeping should be improved at the plant. Where asbestos dust accumulates and clean-up is performed by dry sweeping methods, vacuuming should be instituted.

4. Vacuuming facilities should be provided for workers to clean their clothes before leaving the plant. Blowing clothes with air hoses should not be allowed.

TABLE I. ASBESTOS FIBER COUNTS BY AREA AND OCCUPATION COLLECTED  
AT THE FILTERING MATERIALS CORPORATION PLANT

<u>Sample No.</u>	<u>Occupation and Location</u>	<u>Sample Time (min)</u>	<u>Fibers/cc*</u>
<u>General Area</u>			
8261	Fiberizer area	16	1.29
8519	Fiberizer area	23	0.06
<u>Breathing Zone</u>			
8259	Fiberizer operator	17	2.59
8505	Fiberizer operator	21	1.33
8517	Fiberizer operator	22	0.73
8503	Fiberizer operator	26	3.78
8514	Fiberizer operator	26	2.76
8506	Fiberizer helper	21	1.26
8501	Fiberizer helper	24	3.42
8515	Fiberizer helper	28	2.51
8518	Fiberizer helper	35	0.38
8513	Die cutter	26	0.11
8516	Die cutter	33	0.04
8258	Die cutter	72	0.32
8371	Die cutter	134	0.38
8369	Die cutter	202	0.25
8260	Inspector	37	0.20
8512	Inspector	52	0.17
8374	Inspector	191	0.27
8509	Batchmaker	36	0.42
8504	Batchmaker	45	0.41
8373	Batchmaker	135	1.47
8372	Batchmaker	204	1.37
8511	Tail off	58	0.15
8370	Tail off	217	0.28
8500	Brander	42	0.31
8502	Chemist	48	0.09
8507	Mechanic	54	0.08
8508	Shipper	54	0.19
8510	Extractor operator	54	0.16

\*Number of fibers per cubic centimeter of air greater than five micrometers in length.

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