

William R. Bradley and Associates

ENVIRONMENTAL HEALTH CONSULTANTS

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Sprayed Mineral Fiber Manufacturers Association, Inc.
Suite 2300
One Wall Street
New York, New York 10005

Attention: Technical Committee

Re: ENVIRONMENTAL HEALTH INVESTIGATION

An environmental health study was made for the Sprayed Mineral Fiber Manufacturers Association, Incorporated on January 12, 1967, at the United States Mineral Products Company in Stanhope, New Jersey, in quarters provided for this study. Products of four companies were sprayed under controlled conditions of application during which tests of air samples were collected in the breathing zone area of the spray operator. These air samples were submitted to microscopic examination and dust count using the approved technique for the determination of respirable size particles in the work environment. The dust counts involved particles 5 microns or less in diameter.



The tests were conducted in a large open area with one side of the building opened directly to the outdoors. The sample collection point was at all times two to three feet of the operators nose. The operator sprayed part of the time on the ceiling and part of the time on the wall during each test. He held the spray nozzle in his hand and applied the products at a distance of three to five feet from the ceiling or wall. A large pedestal fan was turned on to ventilate the test area between each test. Material applied during one test was removed from the wall between each test. Material applied to the ceiling felled by gravity during the tests which gave representative conditions of application.

The same personnel conducted all of the product feed to the blower and performed the spray application. The first twelve tests were conducted for ten minute periods each and the second series of twelve tests were conducted for five minute periods each. During the first twelve tests the Uni-Air type gun with sixteen holes was used. During the second twelve tests the Uni-Jet, airless type gun was used. With each type of spray gun the four products were spray tested under water flow rates of 7- $\frac{1}{4}$ pounds per minute, 10 pounds per minute and 12- $\frac{1}{4}$ pounds per minute. These water flow rates were used with both types of application guns.

The fiber feed rate for all tests was designed for ten pounds per minute. Actual fiber feed rates as supplied by the blower hopper operator were as follows:

USMP	10 to 11.4 pounds per minute
BEH	7 to 8 pounds per minute
S&K	8 to 10 pounds per minute
Asb.	13.6 to 15 pounds per minute

The results of dust samples are as follows:

Dust Sample Analysis

United States Mineral Products Co. (USMP)
Cafco Blaze-Shield Type D

Baldwin-Ehret-Hill, Inc. (BEH)
Pyrospray Type 1

Smith & Kanzler (S&K)
Spraycraft 1132 Type S

Asbestospray Corporation (Asb.)
Asbestospray Type T

Test No.	Product	Water Flow Rate (lbs./minute)	TYPE GUN		Millions of Particles per Cubic Foot of Air
			Uni-Air 16 holes	Uni-Jet Airless	
1.	USMP	7.5	X		13
2.	BEH	7.5	X		18
3.	S&K	7.5	X		21
4.	Asb.	7.5	X		14
5.	USMP	10	X		11
6.	BEH	10	X		17
7.	S&K	10	X		22
8.	Asb.	10	X		12
9.	USMP	12.5	X		9
10.	BEH	12.5	X		12
11.	S&K	12.5	X		14
12.	Asb.	12.5	X		7
13.	USMP	7.5		X	14
14.	BEH	7.5		X	19
15.	S&K	7.5		X	23
16.	Asb.	7.5		X	15
17.	USMP	10		X	13
18.	BEH	10		X	19
19.	S&K	10		X	22
20.	Asb.	10		X	14
21.	USMP	12.5		X	12
22.	BEH	12.5		X	16
23.	S&K	12.5		X	21
24.	Asb.	12.5		X	11

Summary

Results of dust studies made on 4 mineral fiber products sprayed under controlled environmental conditions shows that the spray operator would be exposed to the inhalation of asbestos fibers and other mineral wool dusts that might lead to occupational illness. The threshold limit values for asbestos fiber dusts is 5 million particles per cubic foot of air. It is considered that exposure to asbestos dust in concentration less than 5 million figure will not lead to the formation of asbestosis. Asbestosis is more likely to occur after long continued inhalation of asbestos dusts in high concentration such as may exist in a mining, milling or cutting of asbestos.

All test results were determined to be in excess of the 5 million particles per cubic foot threshold limit value. It is apparent that product application was more dusty when using the Uni-Jet (airless) type gun then when using the air supplied gun. It was also apparent that there was less air-born dust as the water flow rate increased. Products labeled USMP and Asb. were found to be about equal in dustiness as applied. It is noted that more Asb. fiber was applied per

minute than USM application rate. It is noted that S&K fiber is most dusty with product BEH being slightly less dusty in all cases, but considerably more dusty than USMP and Asb. products.

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WRB/dm