PLAINTIFF'S EXHIBIT

SWB-90

MAR 15 1974

MR. JOHN L. BESTEL

Re: Asbestos Fiber Measurements

Asbestos exposures have received increased attention over the past few years because of a growing consensus that a significantly higher incidence of cancer (1-2) has been observed among personnel exposed to asbestos dust. Intermittent exposures of high concentration levels as well as long term exposures at lower levels have been found to cause malignancies. As a result of this developing understanding, new asbestos emission regulations have been promulgated for industries manufacturing or using asbestos materials, and the requirements for process testing and control have been made more rigorous to prevent unnecessary asbestos exposures. Environmental testing is also required under the new regulation.

Western Electric employs transite in relatively small quantities as a heat resistant building material for firewalls in telephone central offices, and in other applications. Since transite is 50% asbestos and 50% Portland cement, an inorganic binder, its fabrication does generate asbestos particles which could become an exposure problem. If the results from the environmental measurements are found to be high, periodic medical examinations of employees working in the area will be needed at an estimated cost to the Company of several hundred thousand dollars per year. Therefore, measurements which show that the concentrations are low could benefit the Company by a direct cost avoidance.

In the fabrication of transite panels, sections are custom sawed with small portable power tools to fit individual openings between floors in the central offices. The panels thus serve as fire stops between the floors. Since each opening may be different, it is not practical to pre-form them to the exact final dimension and so eliminate the need for on-site fabrication.

The sawing operation generates a considerable amount of particulates which mostly fall onto the floor or, for tools equipped with filters, are collected by vacuum filtration. These particulates are removed and discarded. Additional protection is afforded the operator by a mask which is worn while the panel is being sawed. These provisions reduce the potential risk of asbestos fibers inhalation, but does not eliminate the possiblility, since other employees may be exposed in nearby areas.

The degree of risk involved in fabricating the transite panels and whether additional protective steps will be required in the future has heretofore been unknown. It was the purpose of this project to determine the magnitude of the potential exposures and to make any necessary recommendations.

The asbestos measurements described in this report, were made by the authors at a central office in Columbus, Ohio. Mr. F. X. Worden coordinated the project and Mr. A. Skirptunas arranged for the sampling to be done for various sawing operations.

Sampling and Measurement Methods

The sampling was done by drawing the environmental air through open face filters, 35mm in diameter, at a rate of 2.0 liters per minute. The sampling rate for a personnel sampler worn by the operator was 1.6 liters per minute. Type AA white, nongrid, glass-fiber filters were used. The counting was performed by commercial laboratories using 430X phase contrast microscopic examinations. Both the sampling and fiber counting were done in accordance with the appropriate EPA and OSHA regulations.

Sample Collection

The sample sites were located relative to the sawing operation as depicted in Figure 1. The positions of the filter holders are given in Table 1 for each sample period. Each of the sample periods is for a sawing operation, as described in Table 2.

Results and Discussion

The collected samples were sent to a commercial laboratory (Johns Manville Corporation) for counting. The results are given in Table 3. For sample periods A and B, the levels are lower than C-E because in the latter three periods, the sample positions were closer to the operator than for the first two. Thus, they better represented the actual exposure of the operator. The personnel monitor indicated a higher concentration level in general than the other positions. As expected, the concentration level was higher for positions 24" from the floor than for corresponding positions 36" high.

Seven out of nineteen samples were in excess of the 1976 TLV and one exceeded the present TLV. Since the operator wore a filter to remove the asbestos, he was not exposed to high concentrations. However,

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in view of the potential hazard of smaller particles, control steps should be initiated to reduce the chance of inadvertent exposure. These steps should include prefabricating the panels by wet-cutting in all possible cases, and the installation of vacuum pick-ups on each saw used. If practical, panels with knock-out segments could be precut in order to reduce the amount of on-site fabrication.

Conclusion

Tests have been made near areas where the fabrication of transite (50% asbestos) takes place. The results indicate that it is possible to be exposed to concentrations in excess of the 1976 TLV if simple precautions are not taken. Since it is unknown how much of the asbestos exists as particles smaller than 5 μm, it is recommended that additional tests be made to determine the total particulate content in the vicinity of the fabrication site, and to test for fibers larger than 2.0μm under conditions in which vacuum pick-ups are used.

JED:RPM:DC

J. E. Dennison
J. E. DENNISON

R. P. Menichelli/dc
R. P. MENICHELLI

Copy to:
A. Skirptunas-Central Region
J. P. Dunn, M.D.-222 Bdwy.
F. X. Worden-222 Bdwy.
W. K. Hammel
M. W. Sagal

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Table 1

Sample Positions

Sample Period	SAMPLE STATIONS			
	1	2	3	4
A	5 ft. on right 3 ft. from floor	on table 3 ft. in front 1.5 ft. from floor	5 ft. on left 3 ft. from floor	On Operators Lapel
B	Same as Period A			
C	3 ft. on right 15" from floor	Same as above	3 ft. on left 2 ft. from floor	Same as Period A
D	Same as Period C			
E	Same as Period C			

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Table 2

Operating Conditions for Asbestos Sampling

Sample Period	Position/Situation	Sample Time (min.)
A	Reciprocating Saw HDMC-214. First used old blade SEELECT WE-3149. Second blade WE-R-314A First panel cut in 41 min. window open	74.62
B	Background during lunch break	67.4
C	Saber saw WE R# 4339, window closed	65.2
D	Saber saw, second run	27.3
E	Reciprocating saw, second run	30.0

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Table 3

Asbestos Concentrations

Sample Period	Sample Station	Concentrations (fibers/cc)
A	1	1.9
	2	0.2
	3	0.3
	4	1.9
B	1	0.3
	2	0.1
	3	0.1
	4	---
C	1	2.5
	2	0.4
	3	2.9
	4	3.5
D	1	2.4
	2	1.3
	3	1.7
	4	2.8
E	1	0.9
	2	5.2
	3	1.2
	4	2.4

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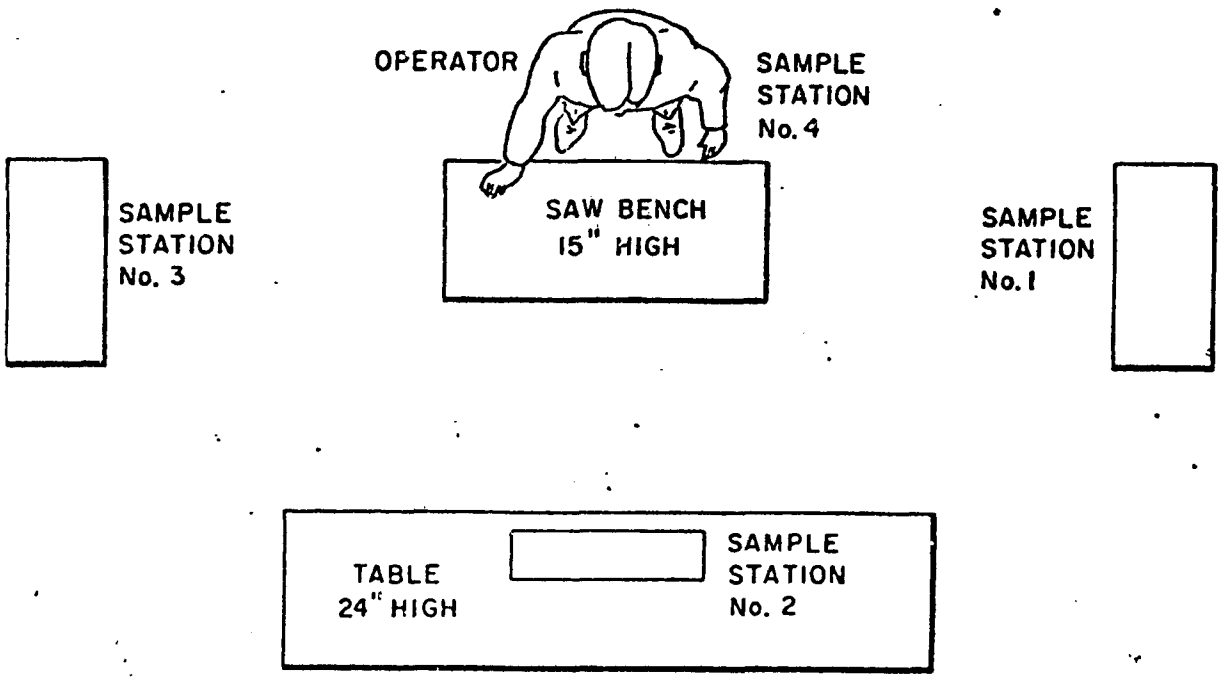


Figure I. SAMPLE STATIONS FOR ASBESTOS AT THE COLUMBUS CENTRAL OFFICE

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