

ASBESTOS-2



100-1-1

The Industrial Hygiene Services Branch of the National Institute for Occupational Safety and Health (NIOSH) performed a survey of the Asbestos Products Company, Cleveland, Ohio during the period July 19-21, 1972 to determine the exposure of the employees to airborne asbestos fibers. Forty-four breathing zone samples were taken throughout the plant. No samples were in excess of present U.S. Department of Labor standards.

INTRODUCTION AND PURPOSE OF STUDY

Asbestos Products Company is a fabricator of personal protective clothing, including asbestos gloves, mittens, hoods, etc. Other non-asbestos containing articles such as aprons and cotton filter bags are also manufactured. The asbestos fabric used is woven from yarn composed of approximately 80% asbestos and 20% cotton fibers. Various weights and types of fabrics, mostly Underwriters grade, but some resin treated or "wet brushed" fabrics are used.

This study was conducted July 19-21, 1972 by the Industrial Hygiene Services Branch of the Division of Technical Services, NIOSH, at the request of Mr. Charles Grossman, President of Asbestos Products Company. The purpose was to determine if their operations are in compliance with the U.S. Department of Labor standard for exposure to airborne asbestos fibers.

2. ANALYTICAL METHOD, PROCEDURE, AND INSTRUMENTATION

Atmospheric samples for dust count were collected on Millipore Type A and membrane filters of 0.4 micrometer porosity enclosed in three piece plastic Millipore aerosol field monitors with face cap removed and filter completely exposed. The samples were taken in the operator's breathing zone using battery powered Mine Safety Appliances (MSA) gravimetric pumps, Type G. The pumps and samplers were worn by the employees. The pumps were calibrated and adjusted to operate at 2.0 liters per minute. Samples were taken for approximately one hour.

Breathing zone samples of 38 employees were taken covering a wide range of operations including sewing, layout and cutting, clicking, glove and mitten turning, sweeping, inspecting, packing and stapling. To obtain general background levels, some samples were taken where asbestos was not being processed. A total of 44 samples were taken. They are collated in Table 1.

TOXICOLOGIC AND HYGIENIC STANDARDS

✓ Asbestos is a general name given to a variety of fibrous minerals including chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite. Asbestosis, lung cancer, and pleural and peritoneal mesothelioma may follow exposure to asbestos. The risk is related to the

*Registered trade name of the Millipore Corp., Bedford, Mass.

has been found to be in good agreement with the published data.

The Secretary of the U.S. Department of Labor promulgated standards for the exposure of employees to asbestos effective July 7, 1972. The standard for time-weighted average airborne concentrations of asbestos fibers greater than five micrometers in length, which any employee may be exposed shall not exceed five fibers per cubic centimeter of air. A ceiling concentration was also defined, viz., no employee shall be exposed at any time to airborne concentrations of asbestos fibers greater than five micrometers long in excess of ten fibers per cubic centimeter.

RESULTS OF STUDY

Forty-four breathing zone samples were obtained. The asbestos fibers were counted at 400-450X (magnification) (4 millimeter objective) with phase contrast illumination by personnel at the Western Area Occupational Health Laboratory, Salt Lake City, Utah. None of the samples exceeds current U.S. Department of Labor standards for exposure to asbestos.

In general, working conditions are very good. Management has some concern over housekeeping and has been experimenting with a power vacuum sweeper for the floors. Although the operator of the floor sweeper was exposed to a higher concentration of asbestos than

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the mean exposure of 0.62 on the day of the survey. The exposure was well below the existing standard. Employees normally work in their street clothes and merely brush their clothing with a stiff broom before leaving. It was suggested that some sort of vacuum device be made available to the employees to decontaminate their clothing.

DISCUSSION AND CONCLUSIONS

Considerable variations in the concentration of fibers determined for employees doing similar operations was observed. This is due to the freedom of the workers to move about, performing ancillary duties, and to the specific tasks assigned during the sampling periods.

Based on the data obtained during this survey, no violations of the OSHA standards for asbestos were found.

The weather was very hot and humid and most of the windows were open. Many fans were in use positioned at the workers discretion. All sewing machines were equipped with small oscillating fans which were normally directed so that the air blew across the sewing head to the sewer. Observation of smoke trails confirmed this airflow pattern. This is generally considered to be poor practice; the air should carry the dust away from the operators' breathing zones. However, fewer fibers were collected on the filters when the fans were in use. This is probably due to the oscillation of the fans which tends to scatter the

the number of airborne particles; hence lower the concentration. It could be
possible that a change of this establishment be made to the center
where the whole is closed and fans not operating. But for, lower
humidity would enhance static electricity build-up which might increase
the number of airborne particles.

RECOMMENDATIONS

None: the results of this survey indicate that the facilities of
Asbestos Products comply with U.S. Department of Labor standards
for asbestos.

REPORT APPROVED BY:

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TABLE 1

Concentration of asbestos fibers in breathing zones of employees of
Asbestos Products Company

Employee	Sample No.	Concentration	Time of Day	Remarks
Layoff & Cleanup	138	0.8	7/19 pm	
	138	0.2	7/20 pm	
	3967	0.6	7/20 pm	cutting wet asbestos
	Average	0.5		
Chipping	129	0.4	7/19 pm	
	148	0.4	7/20 am	
	147	0.2	7/20 pm	
	110	0.3	7/21 am	
	Average	0.3		
Sewing	127	0.1	7/19 pm	
	131	0.9	7/19 pm	
	132	0.4	7/19 pm	
	137	0.8	7/20 am	fan off
	142	2.4	7/20 am	fan off
	143	0.4	7/20 am	fan off
	144	1.2	7/20 am	fan off - sewing thru
	100	0.1	7/20 am	sewing cotton
	107	0.2	7/20 am	
	145	0.5	7/20 am	closing (cuffs)
	3973	0.4	7/20 am	
	112	0.9	7/20 pm	
	113	0.3	7/20 pm	
	105	0.3	7/21 am	
	106	0.6	7/21 am	
	108	0.2	7/21 am	
	111	0.5	7/21 am	linings
	3976	0.2	7/21 am	wet asbestos
	Average	0.6		

No. of fibers greater than 5 micrometers long per cubic centimeter of air.
 *All, less otherwise noted nearby, fans were in operation.

TABLE 1

Concentration of Asbestos Fibers in Breathing Zones of Employees of
Asbestos Products Company

Location	Sample No.	Concentration ^a	Time of Survey	Remarks
Manufacturing	130	2.1	7/19 pm	
	134	0.8	7/19 pm	
	135	0.5	7/19 pm	thumb turning,
	149	3.3	7/20 am	fan off
	150	2.5	7/20 am	fan off
	146	0.8	7/20 am	
	101	0.6	7/20 pm	
	3969	0.3	7/21 am	thumb turning
	3970	0.6	7/21 am	
	Average	1.3		
Stapling	136	0.1	7/20 am	cottons and leather
Inspection	126	0.6	7/19 pm	
	141	0.4	7/20 am	fan off
	102	0.2	7/21 am	
	109	0.1	7/20 am	metallized asbestos jackets
	Average	0.3		
Packing and Shipping	114	0.2	7/20 pm	
Sweeping	140	0.5	7/19 pm	
	104	0.6	7/20 pm	
	103	1.2	7/20 pm	vacuuming floors
	Average	0.8		
Supervision	133	0.3	7/19 pm	

^aNo. of fibers greater than 5 micrometers long per cubic centimeter of air.
^bUnless otherwise noted nearby, fans were in operation.