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A STUDY OF THE ASBESTOS HAZARD
HAVEG INDUSTRIES
INCORPORATED
Wilmington, Delaware

January 19, 1966

Industrial Hygiene Services
Employers Mutuals of Wausau

Haney #4

Exhibit 30

A STUDY OF THE ASBESTOS HAZARD
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This study was made on January 19, 1966, to determine the concentration of asbestos dust to which workers are exposed during normal operations, and to evaluate the need for controls to prevent excessive exposures.

Scope of Study

Five atmospheric dust samples were collected in the Asbestos Treating, Drying, Storage, and Mixing Rooms.

Apparatus and Method of Analysis

The samples for atmospheric dust were collected by means of the M. S. A. Midget Impinger. The impinger flask was placed in the breathing zone of the workers involved, and the sample collected. Following collection, the sample flasks were submitted to the laboratory and dust counts made using the Sedgewick-Rafter counting cells and a microscope calibrated for counting dust according to the United States Public Health Service Standard Method.

Threshold Limit Value For Asbestos

The American Conference of Governmental Industrial Hygienists has adopted a Threshold Limit Value (TLV) of 5,000,000 particles per cubic foot of air (m. p. p. c. f.).

The TLV for asbestos, as for other dusts, fumes, vapors and gases, represents the concentration to which workers may be exposed, 8 hours per day, 5 days per week indefinitely without adverse effects upon their health. These concentrations refer to the average 8 hour exposures, rather than to maximum values which should not be exceeded even momentarily.

Analytical Results

The dust counts as determined by the light-field technique, are given in Table I, together with the TLV.

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TABLE I
CONCENTRATIONS OF ASBESTOS IN AIR
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January 19, 1966

Sample Number	Location	Dust Concentration in Air, m.p.p.c.f. Found	TLV	Remarks
1	Asbestos Drying Department	7.1	5.0	A
2	Asbestos Storage Department	20.0	5.0	B
3	Asbestos Drying Department	18.4	5.0	C
4	Asbestos Mixing Department	17.3	5.0	D
5	Location Asbestos Treating Department	0.8	5.0	E

Remarks:

A. One man, no respirator. Inspection door on the chute from the dryer to the pneumatic conveyor open. Settled dust accumulations on horizontal structures.

B. No bins unloaded during sample, but dust escaping bins into the work area through cracks and other openings in the bins. Bin exhaust fan operating backwards.

C. Repeat of sample No. 1, after bin exhaust fan rotation direction was corrected.

D. One man, no respirator. Two carts were loaded from Bin No. 3 during sampling. Direction of air flow was from the Storage Department to the Mixing Department.

E. Work in this department is wet work.

Discussion of Results

Only in the Treating Department were the dust concentrations below the Threshold Limit Value. In other areas where Asbestos is handled, dust concentrations ranged from 7.1 mppcf (Sample No. 1) to 20.0 mppcf (Sample No. 2).

Two principle dust sources were leaks and openings in the dryer which permitted dust to escape into the Drying Department, and the bins in the Storage Department. During the survey, dust clouds were observed escaping from the bins despite the operation of the exhaust fan designed to ventilate the bins.

The high asbestos dust concentration found in the Mixing Department (17.3 mppcf), where local exhaust ventilation hoods are located at each mixer, is attributable to the movement of dusty air from the Storage area into the Mixing Department with an air inflow to the bins, rather than an outflow such as existed during the survey, both the Storage and Mixing areas would have considerably lower dust concentrations.

Suggestions For Improved Controls

The following suggestions are offered for reducing the asbestos dust exposure:

1. All leaks from the dryer and pneumatic conveying system should be eliminated to prevent the escape of dust into the dryer area.

2. The inspection door on the chute from the dryer to the pneumatic conveyor should be kept closed to conserve exhaust ventilation capacity.

3. The storage bins should be placed under negative pressure so that air flow would be into the bins even with a door opened for cart loading. This would require the exhaust fan on the bins to have a capacity of 100 cubic feet of air per minute per square foot of door opening, in addition to the capacity of the pneumatic conveying system.

4. The bin exhaust fan should be provided with an air flow switch interlocked with the dryer or with an alarm, so that low air flows through the exhaust system would either shut down the dryer or sound the alarm indicating the need for corrective measures.

5. Until dust control measures can be instituted, workers in the Storage, Drying and Mixing areas should wear U. S. Bureau of Mines approved dust respirators of the type presently used when bins are unloaded.

6. A measure of the effectiveness of dust control measures is the periodic physical examination program presently in effect. This program, which includes chest x-rays of workers exposed to asbestos should be continued.

Conclusion

This study showed that operations involving asbestos in the Drying, Storage, and Mixing Departments results in excessive air-borne dust concentrations. Some suggestions have been given for minimizing the exposure of workers to excessive concentrations of asbestos dust.