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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HAZARD EVALUATION AND TECHNICAL ASSISTANCE
REPORT NO. TA 79-31

POOLE CONSTRUCTION COMPANY
DENVER, COLORADO

AUGUST 1979

I. SUMMARY

The National Institute for Occupational Safety and Health (NIOSH) received a confidential request for technical assistance to evaluate a potential health hazard at a building under construction by Poole Construction Company, Denver, Colorado. The subject of this request was possible asbestos exposure during the sawing and handling of asbestos sheetboard. Environmental assistance was provided on June 25, 1979, to determine asbestos exposure to three carpenters who were sawing and working with the sheetboard.

Based on the results of air monitoring in the breathing zone of the workers, a health hazard existed from overexposure to asbestos fibers. Recommendations to protect workers are given in Section IV of this report.

II. BACKGROUND INFORMATION

Asbestos sheetboard was being used at this facility for the enclosure of the air conditioning and heating physical plant. The physical plant that was being enclosed is located on the 28th floor of a newly constructed building. All workers that were working with and around the asbestos board were monitored for possible asbestos exposure. Exposure time varies from one hour to 3 hours. Rarely is a worker exposed for over a four-hour work period.

III. TECHNICAL ASSISTANCE

A. Study Design and Analytical Methods

All three asbestos workers were interviewed and monitored for asbestos exposure. These workers did not have a long history of asbestos exposure.

Environmental breathing zone air samples for asbestos were collected on AA filters and counted on a phase contrast microscope.

B. Environmental Evaluation Criteria and Results

Excessive asbestos fibers are generated during the sawing and handling of the asbestos board.

NIOSH recommends that occupational exposure to asbestos be controlled so that workers are not exposed to a workroom air concentration for an 8-hour time weighted average (TWA) exposure of 0.1 fibers per cubic centimeter greater than 5 microns in length and 0.5 fibers per cubic centimeter greater than 5 microns in length for a 15-minute Ceiling. The U.S. Department of Labor/Occupational Safety and Health (OSHA) standard for asbestos for an 8-hour (TWA) exposure is 2.0 fibers per cubic centimeter greater than 5 microns in length, and a Ceiling concentration of 10 fibers per cubic centimeter greater than 5 microns in length. All breathing zone and general room air samples exceeded the NIOSH evaluation criteria. It is judged that the first three samples were over the evaluation criteria since these filters were too contaminated with asbestos for analysis and the sampling time was less than three hours.

Results may be reviewed in Table 1.

C. Toxicology of Asbestos

Repeated exposures to high concentrations of asbestos over a long period of time will cause asbestosis which is a disabling fibrotic disease of the lungs. Any exposure to asbestos increases a worker's chance of developing an asbestos related cancer later on in life.

D. Conclusions

Based on the environmental sampling and the inadequate respirator program, a hazardous situation existed during this evaluation to all the workers that were working with the asbestos board. Management did purchase adequate respirators; however, workers were neither properly trained in the use of the respirators nor were the respirators adequately fitted. Management should institute a respirator program that complies with the eleven criteria outlined in the Occupational Safety and Health Administration standards 29 CFR 1910.134, January 1978.

IV. RECOMMENDATIONS

1. An adequate respirator program protecting workers from elevated asbestos exposure should be started immediately.

2. Eating, drinking, and smoking should be prohibited when workers are working around asbestos.
3. Workers should be trained on the potential dangers from overexposure to asbestos.
4. Employees should not carry their cigarettes on the work site when working with asbestos.
5. Workers should take showers and leave their work clothes at the work site when working with asbestos and receiving exposures as high as the ones found during this evaluation.

V. AUTHORSHIP AND ACKNOWLEDGMENTS

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TABLE 1

Breathing Zone and General Room Air Concentrations of
Asbestos Fibers

Poole Construction Company
Denver, Colorado

June 25, 1979

Sample Number	Location	Job Classification	Sampling Time	Asbestos Fibers/cc*
1	28th Floor	Carpenter	7:40 AM - 10:45 AM	**
2	28th Floor	Carpenter	7:40 AM - 10:30 AM	**
3	28th Floor	Carpenter	7:42 AM - 10:45 AM	**
4	28th Floor	General Room	7:44 AM - 10:21 AM	0.97
5	28th Floor	General Room	7:45 AM - 10:20 AM	0.90
6	28th Floor	Carpenter	10:20 AM - 10:45 AM	10.48

EVALUATION CRITERIA

0.1 TWA

0.5 C

LABORATORY LIMIT OF DETECTION

0.03

* = fibers per cubic centimeter greater than 5 microns in length.

** = filters were too heavily loaded for analysis.

TWA = time weighted average

C = Ceiling