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HEALTH HAZARD EVALUATION REPORT 72-27-21
HAZARD EVALUATION SERVICES BRANCH
DIVISION OF TECHNICAL SERVICES

Establishment: Hoerner-Waldorf Corporation
Jefferson, Ohio

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

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HOERNER-WALDORF CORPORATION
JEFFERSON, OHIO

SEPTEMBER 1972

SUMMARY DETERMINATION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees regarding exposures to asbestos dust at the Hoerner-Waldorf Corporation plant in Jefferson, Ohio.

Personnel and general area samples for airborne concentrations of asbestos were collected at the bailing, corrugation, and printing sections of the plant. Asbestos dust levels at the bailing operation were not in excess of the present U.S. Department of Labor standard of 5.0 fibers/cc (8-hour time-weighted average) and 10.0 fibers/cc (ceiling concentration). The findings showed a concentration of 2.1 fibers/cc in the breathing zone of the worker and a level of 0.3 fibers/cc in the general area. The unit of measurement for the asbestos standard is the number of fibers greater than 5 micrometers in length per cubic centimeter (cc) of air as promulgated by the U.S. Department of Labor (Federal Register, Volume 37, §1910.93a, June 7, 1972). The printing area had higher levels of asbestos dust. The asbestos counts in the breathing zones of the "feeder" and "stacker" were 2.5 and 5.6 fibers/cc respectively. The latter value is in excess of the present standard of 5.0 fibers/cc. The general area dust level near the "tail off" section where the "stackers" and "counters" work was 6.6 fibers/cc. This value is in excess of the 5.0 fibers/cc standard. Several breathing zone samples were collected on workers operating the "corrugator." The counts ranged from 0.2 - 1.0 fibers/cc which were well below the present standard.

It is our determination that a hazard to the health of workers exists from exposure to asbestos in the printing area. This is based upon the environmental concentrations obtained at the time of this survey and upon the documentation in the literature supporting the standard. Recommendations to obviate the asbestos hazard to the five affected employees at the

printing machine have been made to management. Additionally, general recommendations consistent with the rules and regulations set forth by the U.S. Department of Labor have been made to management.

Copies of this Summary Determination as well as the Full Report of the evaluation are available from the Hazard Evaluation Services Branch, NIOSH, Cincinnati, Ohio 45202. Copies of both have been sent to:

- a) Hoerner-Waldorf Corporation plant, Jefferson, Ohio
- b) Authorized Representative of Employees
- c) U.S. Department of Labor - Region V

For purposes of informing "affected employees," the employer will either (1) "post" the Summary Determination in a prominent place near where affected employees work for a period of 30 days or (2) provide a copy of the determination to each affected employee.

I. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees regarding exposure to asbestos dust at the Hoerner-Waldorf Corporation plant, Jefferson, Ohio.

II. BACKGROUND HAZARD INFORMATION

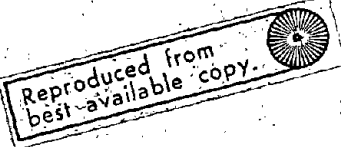
A. Standards

The occupational health standard promulgated by the U.S. Department of Labor applicable to the particular substance of this evaluation is listed below. Permissible exposure to airborne concentrations of asbestos fibers (Federal Register, Volume 37, Section 1910.93a, June 7, 1972) is outlined as follows:

- | | |
|--|-----------------------|
| (1) Standard Effective July 7, 1972 | 5.0 fibers/cc* |
| (2) Standard To Go Into Effect July 1, 1976 | 2.0 fibers/cc* |
| (3) Ceiling Concentration Applicable
At All Times | 10.0 fibers/cc** |

* 8-hour time-weighted average airborne concentration of asbestos fibers longer than 5 micrometers in length per cubic centimeter (cc) of air

** Airborne concentration of asbestos fibers longer than 5 micrometers in length per cc of air not to be exceeded at any time as determined by a minimum sampling time of 15 minutes



B. Toxic Effects

Prolonged inhalation of asbestos fibers may result in the production of a typical pulmonary fibrosis which may be accompanied by severe respiratory disability. If large quantities of the fibers are inhaled over an extended period of time, characteristically 10 to 20 years, tissue reaction progresses until a generalized, diffuse fibrosis (known as asbestosis) becomes evident. This fibrosis is seen first in the lower lobes of the lungs but eventually, if exposure continues, appears in the other lobes as well. Respiratory insufficiency and cardiac failure may supervene. Additionally, there is increasing evidence that the frequency of bronchogenic cancer is greater among workers in certain asbestos industries than expected in the general male population as well as more evidence of an increased rate of occurrence of mesothelioma of the pleura or peritoneum. These asbestos associated neoplasms may occur without radiological evidence of asbestosis which means that prevention of even short-term high level exposures to asbestos may be extremely important.

III. HEALTH HAZARD EVALUATION

A. Observational Survey

A health hazard evaluation survey of the baling, corrugation, and printing areas of the Hoerner-Waldorf Corporation plant was made on June 7, 1972, by NIOSH representatives Melvin T. Okawa and Mrs. Jane Lee. The functions of the National Institute for Occupational Safety and Health and its relation to Section 20(a)(6) of the Occupational Safety and Health Act of 1970 was explained to Mr. the production manager, who assisted in the completion of the National Surveillance Network Part I questionnaire.

Environmental surveys of the baling, corrugation, and printing operations were conducted on June 7 and August 23, 1972. Mr. assisted us during the observational and environmental surveys. On June 7, we were also accompanied by an official from the home office of Hoerner-Waldorf and an industrial hygienist from the company's insurance carrier. The employees' representative took part in our survey of the baling operation on June 7, but was not present during the remainder of our visit.

Hoerner-Waldorf is a manufacturer of corrugated shipping containers of all types. Approximately once every three weeks, a customer purchases containers laminated with asbestos. Depending on its size, the special order is usually completed in two to three days.

One of the initial steps in the special asbestos order is completed at the corrugation machine where asbestos sheets are combined and laminated to corrugated pieces of container material. These pieces are cut to size and hand stacked at the "cut off" end of the machine. Approximately 6 men handle this operation during a shift. The dust is generated at the "cut off" end where twin blades slice pieces of the laminated material to size. Two flexible hoses are provided for local exhaust ventilation, but some dust is still generated. The set-up is the same for regular and asbestos products. Respirators were not worn by workers.

The containers which are ready for final processing are sent to the printing machine where they are stamped for identification and trimmed. Generally, one person feeds the machine while 3-4 people stack and count the sheets of material as they roll off of the "die cutter." Dust is generated from the cutting operation as the pieces of material are sent through the printing machine. The worker feeding the machine was the only one wearing a respirator. Local exhaust for dust was not provided.

One small scrapping operation was observed during our visit. The local exhaust ventilation systems are used to collect scrap pieces of material. The scrap pieces of asbestos are pulled into a small room which contains a chute. The chute feeds a bailing machine which compresses the scrap into bails. One worker stands at the edge of the room and shoves the scrap into the chute with a rake. This operation takes about one hour to complete each time the asbestos order is manufactured. The worker wears a respirator during the bailing operation.

The occupational health hazards for all of these operations were judged to be potential exposures to asbestos dust.

B. Environmental Survey

On June 7, 1972, the initial environmental survey was conducted to determine asbestos dust exposures at the printing and bailing machines. On this date, we were unable to survey the "corrugator" area since the asbestos lamination process had been completed prior to our arrival. Our surveys have been scheduled in advance without prior notification to the employer. In this instance, our survey happened to correspond with a day in which asbestos was being processed and we were able to look at some of the operations. A return visit by NIOSH representatives was made on August 23, 1972, in order to survey the "corrugator" area.

Personnel breathing zone and general room air samples were collected with the same type of instruments. MSA Model G battery operated pumps were used to draw air through oper-face holders containing 37-millimeter Millipore type AA filters at a rate of 2.0 liters per minute. Sampling times ranged from 31-80 minutes.

NIOSH representative Mrs. Jane Lee handled the medical aspects of the health hazard evaluation. She interviewed employees to determine if any of them were suffering adverse effects from handling asbestos material. Mrs. Lee also confirmed the type and extent of routine physical examinations offered to asbestos workers by the company.

Results:

The asbestos samples were sent to NIOSH facilities in Salt Lake City, Utah, to be analyzed and counted. The results of the asbestos sampling survey are contained in Table I.

One personnel and one area sample were taken during the bailing operation which lasted for approximately 50 minutes. The asbestos fiber count in the worker's breathing zone was 2.1 fibers/cc while the count in the general area outside of the bailing room was 0.3 fibers/cc. These fiber counts were not in excess of the present U.S. Department of Labor standard of 5.0 fibers/cc (time-weighted 8-hour average) or 10.0 fibers/cc (ceiling concentration).

Three samples were collected during the printing operation. Personnel samples were taken on the "feeder" and the "stacker" employees. The count in the breathing zone of the "feeder" was 2.5 fibers/cc and the concentration in the breathing zone of the "stacker" was 5.6 fibers/cc. The latter result was in excess of the U.S. Department of Labor standard of 5.0 fibers/cc. One general area sample was collected near the control panel. The "stackers" and "counters" work near the control panel. The count in this area was 6.6 fibers/cc which is in excess of the 5.0 fibers/cc standard.

On August 23, 1972, an environmental survey of the "corrugator" area was conducted. With advance arrangements, we were able to take quite a few samples. Ten breathing zone samples were taken on all of the employees associated with the corrugation machine. The asbestos fiber counts ranged from 0.2 - 1.0 fibers/cc. These counts were well below the present standard of 5.0 fibers/cc and below the standard of 2.0 fibers/cc which will go into effect in 1976.

Several employees were questioned by Mrs. Lee concerning their experiences with the asbestos material. Mrs. Lee concentrated on outward signs and symptoms associated with lung ailments. None of the workers claimed that they were suffering any adverse effects from working with asbestos. One employee did express the fact that he suffered from some shortness of breath, but he was also a heavy smoker. Further inquiries by Mrs. Lee revealed that no routine medical examination program is provided by the company to employees working with asbestos.

Summary:

Environmental surveys of the bailing, printing, and corrugation processes were conducted for airborne concentrations of asbestos fibers at the Hoerner-Waldorf Corporation plant in Jefferson, Ohio. The asbestos count in the breathing zone of the worker who attended the bailing operation was 2.1 fibers/cc while the concentration in the general work area was 0.3 fibers/cc. These fiber counts did not exceed the present standard of 5.0 fibers/cc (8-hour time-weighted average) or 10.0 fibers/cc (ceiling concentration) promulgated by the U.S. Department of Labor (Federal Register, Volume 37, Section 1910.93a, June 7, 1972). The fiber counts were high in the "tail off" section of the printing machine operation where the "stackers" and "counters" work. The concentration in the breathing zone of one "stacker" was 5.6 fibers/cc and the count in the general work area was 6.6 fibers/cc. These counts were in excess of the present standard of 5.0 fibers/cc. The feed side of the printing machine was less dusty. The count in the breathing zone of one "feeder" was 2.5 fibers/cc. This value was not in excess of the present standard. The asbestos fiber counts in the breathing zones of the workers attending the corrugation machine ranged from 0.2 - 1.0 fibers/cc. These counts were well below the present standard.

The specific occupational health problem at the Hoerner-Waldorf plant is complicated by the fact that the asbestos product is manufactured or processed, on the average, for 2-3 days per month. We could suggest the use of personal protective equipment to obviate the asbestos hazard since the exposure to asbestos does not occur every day. However, this recommendation would not be consistent with sound industrial hygiene practice and it would not conform to the rules and regulations promulgated by the U.S. Department of Labor for the use of asbestos in industry. As outlined in the rules and regulations (Federal Register, Volume 37, Section 1910.93a, June 7, 1972), compliance for exposure limits to asbestos will not be achieved by the use of respirators or shift rotation except for the time period needed to install engineering controls, or if engineering controls are not feasible or are ineffective, or during emergencies. Additionally, the asbestos standard is the first one adopted by the U.S. Department of Labor where specific rules and regulations concerning the environmental and medical monitoring of the "substance" have been extensively outlined. Also, the present asbestos standard of 5.0 fibers/cc will be lowered to 2.0 fibers/cc in 1976. All of these factors were taken into account in making our recommendations to obviate the health hazard from asbestos.

RECOMMENDATIONS

- (1) Local exhaust ventilation should be designed for the printing machine and installed as soon as possible to lower the dust levels in the area.
- (2) Until engineering controls are installed at the printing machine, all workers must wear approved dust respirators for asbestos in the area in accordance with the rules and regulations set forth in the Federal Register (Volume 37, Section 1019.92a, June 7, 1972).
- (3) The worker attending the bailing machine should wear an approved respirator whenever scrap asbestos is being bailed.
- (4) The present procedure of using air hoses to clean the printing machine should be discontinued and replaced with vacuum cleaning methods. Air hoses for cleaning should not be used in any areas where asbestos is being processed.
- (5) The rules and regulations governing the use and control of asbestos in industry are contained in the Federal Register (Volume 37, Section 1910.93a, June 7, 1972). A copy of this document should be obtained by management. The requirements for environmental and medical monitoring of workers using asbestos are set forth. Housekeeping requirements are detailed in this document. These provisions should be followed carefully by management.

TABLE I. ASBESTOS COUNTS IN FIBERS/CC FROM SAMPLES COLLECTED
AT THE HOERNER-WALDORF CORPORATION PLANT

<u>Sample No.</u>	<u>Area/Occupation</u>	<u>Asbestos Count*</u>
235	Bailing - Operator	2.1
219	Bailing - General Area	0.3
220	Printer - Feeder Operator	2.5
158	Printer - Stacker (tail off)	5.6
225	Printer - General Area (control panel)	6.6
9570	Corrugator - Knifeman	0.4
9578	Corrugator - Knifeman	0.6
9571	Corrugator - Assistant Operator	0.2
9579	Corrugator - Assistant Operator	0.3
9572	Corrugator - Stacker (tail off)	0.7
9575	Corrugator - Stacker (tail off)	1.0
9573	Corrugator - Stacker (tail off)	0.3
9577	Corrugator - Stacker (tail off)	0.7
9574	Corrugator - Stacker (tail off)	0.4
9576	Corrugator - Stacker (tail off)	1.0

*Units of measurement: fibers/cc - the number of fibers longer than 5 micrometers in length per cubic centimeter (cc) of air.