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

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 73-133-136

ARMSTRONG CORK COMPANY
JACKSON, MISSISSIPPI
MAY 1974

I. TOXICITY DETERMINATION

It has been determined that employee exposures to mottle dust which contained small amounts of lead and asbestos found in the Mottle Area are not toxic in concentrations measured during the environmental evaluation performed on October 30, 1973. This determination is based on low workroom concentrations of these substances and absence of medical symptomatology. During the environmental evaluation no significant symptoms were reported by interviewed employees. Respirable dust concentrations and asbestos fibers were well below levels believed to be toxic to employees.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this determination report are available upon request from the Hazard Evaluation Services Branch, NIOSH, U.S. Post Office Building Room 508, 5th and Walnut Streets, Cincinnati, Ohio 45202.

Copies have been sent to:

a) Armstrong Cork Company
b) U.S. Department of Labor Region IV
c) NIOSH - Region IV
d) Authorized Representative of Employees

For the purpose of informing the approximately four "affected employees" the employer will promptly "post" the Determination Report in a prominent place(s) near where exposed employees work for a period of 30 calendar days.

III. 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 exposures to mottle dust and asbestos in the first floor Mottle Area of the Armstrong Cork Company, Jackson, Mississippi.

IV. HEALTH HAZARD EVALUATION

A. Description of Process - Conditions of Use

The Armstrong Cork Company manufactures several types of floor tile. The initial processes in preparing floor tile and mottle are achieved on the third floor. Weighted quantities of asbestos, pigments, fillers and binders are added to a holding container forming a mix. Some of the color pigments may contain lead. The mixture is emptied into a chute leading into a blender. The mixture and oil are combined in a blender to form a paste-like material which is transferred into an oven and then to a presser which presses the material to its appropriate thickness. A conveyor belt transfers the pressed material to the tile line. An automatic mottle applicator above the tile line conveyor belt applies the mottle. The tile is then cut to standard square floor tiles, cooled and packed.

Mottle material is also prepared on the third floor. The materials used in preparing mottle are identical to those used in the making tile except that if asbestos is used its quantity is very limited. About 75% of the mottle prepared does not contain asbestos. The source of asbestos in mottle is usually recycled floor tiles. The procedure for preparing virgin mottle is similar to the floor tile procedure. The hot press mottle is transferred to the mottle line. The hot mottle material is cooled, chipped, pulverized and transferred to a vibrating screen which separates the mottle to specified mesh. The selected size mottle is transferred to a storage container or directly to a blender in the gulping area. Large mottle chips are returned to the grinder to be further pulverized. Containers holding mottle during grinding or pulverizing are provided with local slot ventilation.

B. Evaluation Methods and Design

An environmental evaluation of exposures to mottle dust, lead and asbestos was made on October 30, 1973 in the Mottle Area. Exposures were measured with stationary and personal air samples collected on millipore filters and included both respirable dust and total dust. Bulk samples of color pigments used during the day were also obtained. The NIOSH Cincinnati Laboratory performed the lead and mottle dust determinations. Asbestos fiber counts were performed at the NIOSH Salt Lake City laboratory.

Employees were asked non-directed questions regarding work related health problems. Their responses were recorded and later evaluated with air sampling data.

C. Evaluation Criteria

The occupational health standards promulgated by the U.S. Department of Labor (Federal Register, October 18, 1972, Title 29, Chapter XVI, Subpart G, Tables G-2 and G-3) applicable to individual substances of the evaluation are as follows:

Substance	8-hour-time weighted-average	Fibers longer than 5 micrometer per cubic centimeter
Asbestos	-	5
Lead	0.2 mg/M^3*	-
Inert or Nuisance Dust "mottle dust"		
Respirable	5.0 mg/M^3	-
Total	15.0 mg/M^3	-

- - - - - - - - - -

* Milligrams of substance per cubic meter of air. "Mottle" dust is considered to be an inert or nuisance dust. However, potentially hazardous exposures may occur depending on the percentage of lead or asbestos contained therein.

Occupational health standards for individual substances are established at levels designated to protect workers occupationally exposed on an 8-hour per day, 40 hours per week basis over a normal working life time.

D. Evaluation Results and Discussion

1. Environmental

Air samples were obtained in the Mottle Area, first floor. Specifically, the areas monitored were: grinding, gulping, tile line control panel, and mottle line. Four personal and five stationary area samples were collected. The air samples were evaluated for total and respirable dust and lead concentrations. Asbestos fiber counts were made on two air samples. Respirable mottle dust ranged from 0.31 to 2.54 mg/M^3 and total mottle dust ranged from 2.65 to 10.00 mg/M^3. Lead concentrations for these samples measured 0.01 milligram per cubic meter. Asbestos fiber concentrations were 0.13 and 0.15 fibers per cubic centimeter.

2. Medical Interviews

Toward the end of the work shift four employees assigned as process operators in the Mottle Line Area were interviewed. Each interview was begun in a non-directed manner in an effort to elicit any symptomatology. Past histories of the nose being clogged and sore throat were reported. The occurrence of these symptoms is irregular. One of the four employees did not report any symptoms. None of the symptoms were present during the environmental evaluation.

In view of employees histories of symptomatology it is evident that higher concentrations of dust may have existed at times other than the day of the survey.

E. Recommendations

1. Since asbestos may infiltrate from other areas or while unloading asbestos bags from box cars, consideration should be given in initiating an occupational health program with special emphasis toward medical monitoring. This program should include but not be limited to pre-employment and periodic chest x-ray and pulmonary function tests.

2. Cleaning of work area or equipment with air hoses is discouraged since such practice transfers the dust from one area to another and results in generation of high airborne dust concentrations. It is suggested that a vacuum cleaner be used for such cleaning.

V. AUTHORSHIP AND ACKNOWLEDGMENT

Report Prepared By : Henry Ramos
Industrial Hygienist
Hazard Evaluation Services Branch
Cincinnati, Ohio

Originating Office : Jerome P. Flesch, Chief
Hazard Evaluation Services Branch
Cincinnati, Ohio

Acknowledgments

Laboratory Analysis: Leonard P. Limtiaco
Division of Laboratories and
Criteria Development
Cincinnati, Ohio

W. C. Dixon
Western Area Occupational
Health Laboratory
Salt Lake City, Utah

Summary of Air Samples Concentrations

Armstrong Cork Company
Jackson, Mississippi

October 31, 1973

Location	Operation	Type of Sample	Air Concentrations			
			Respirable Dust mg/M3*	Total Dust mg/M3*	Lead mg/M3*	Asbestos fibers/cc**
Mottle Grinding Area	Grinder	Personal	0.31		0.01	
Mottle Gulp Area	Weighter	"	2.24		0.01	
Tile line	Miller	"	-	10.0	0.01	
Tile line		General Area	2.54		0.01	
Time clock		General Area	-	9.9	0.01	
Mottle line		General Area	-	2.6		
Tile line		General Area	2.09	-	-	
Mottle Grinding Area	Grinder	Personal	-	-	-	0.15
Mottle Grinding Area	Weighter	General Area	-	-	-	0.13
Federal Standard			5	15	0.2	5

* Milligram of particulate per cubic meter of air.
** Concentrations of asbestos fibers to which an employee may be exposed shall not exceed five fibers, longer than 5 micrometer, per cubic centimeter of air.