

PRELIMINARY CONTROL TECHNOLOGY ASSESSMENT

OF

American Olean Tile Company
Lewisport and Cloverport, Kentucky

SURVEY CONDUCTED BY:
Frank W. Godbey

REPORT WRITTEN BY:
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NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
Division of Physical Sciences and Engineering
Engineering Control Technology Branch
4676 Columbia Parkway
Cincinnati, Ohio 45226

PLACE VISITED: American Olean Tile Company
Lewisport and Cloverport, Kentucky

DATE OF VISIT: September 22, 1982

SURVEY TEAM: Frank W. Godbey

EMPLOYER REPRESENTATIVES: Layman Hawkins, Safety Coordinator
William D. Wagner, Plant Engineer (Lewisport)
James Eckman, Plant Manager (Cloverport)
Loren Emmick, Plant Superintendent (Cloverport)
Tommy Flood, Grinding and Packing Supervisor (Cloverport)

EMPLOYEE REPRESENTATIVES: None (Non-Union)

STANDARD INDUSTRIAL
CLASSIFICATION (SIC CODE): 3253-Ceramic Wall and Floor Tile

PURPOSE OF SURVEY: To perform a preliminary assessment of the methods
used in controlling potential health hazards in the
manufacture of quarry clay tile and to determine
the advisability of conducting an in-depth survey of
these plants.

INTRODUCTION

The manufacture of ceramic Quarry tile involves worker exposure to a variety of potentially harmful chemical and physical agents. Some of the agents of concern are: silica, color additives, temperature extremes, and noise. Our literature review and contacts with people in the quarry tile manufacturing industry indicates that there is control technology in place in the industry to prevent the over exposure of workers to these agents.

The Engineering Control Technology Branch of the Division of Physical Sciences and Engineering, NIOSH is conducting a research study to assess and document the control technology being used to minimize worker exposure in the ceramics industry. Exposures to the above mentioned harmful chemical and physical agents have been documented as a cause of a variety of health problems. This walk-through survey was conducted to obtain information on the use of health control technology, when manufacturing quarry tile and to determine the advisability of conducting an in-depth survey of these plants.

The primary contact was the company's Safety Coordinator, Layman Hawkins. During our walk-through survey, we met briefly with other management personnel and talked to a number of personnel physically involved in the manufacture of ceramic quarry tile.

PLANT DESCRIPTION

The American Olean Tile Company produces unglazed quarry tile from locally-mined ball clays and shale. The company employs 198 non-union workers at their Lewisport Operation and 50 non-union workers at their Cloverport Operation. These plants operate one shift each day, five days a week, with the exception of the clay preparation and grinding areas which operates two shifts. The Lewisport Operation occupies about 20 acres and consists of a brick office building and a brick and sheet metal production building containing approximately 400,000 square feet. The Cloverport Operation occupies about 5 acres and consists of one brick and sheet metal office and production building containing approximately 50,000 square feet.

PROCESS DESCRIPTION

Locally-mined ball clays and shale are brought to the plant by truck and dumped in raw material storage bins that are under roof and open to the outside on one side. These raw materials are transported by a front end loader and dumped into feed hoppers in proportional amounts to produce the desired shade of tile. They are fed from the hoppers onto conveyors and transported to Clearfield dry pans for grinding to 35-mesh particle size. The ground material is discharged onto a conveyor for transport up to vibrating screens where the properly-sized particles pass through to another conveyor and the oversized material returns to the dry pan for further size reduction. Other materials (barium carbonate to precipitate naturally-occurring salts, calcium carbonate to lower the melting point, and manganese dioxide as a coloring agent) are fed from hoppers onto the conveyor for blending with the ground body material. The blended bodies are transported by conveyor to storage hoppers in the mill area. The material is fed into a pugmill where it is mixed with water, blended, deaerated and extruded in a continuous ribbon. The ribbon is automatically cut into individual tiles that are placed onto trays in a batch type dryer where they are dried for approximately 20 hours at 175-190 °F temperature. The dried tile, containing one-half to one percent moisture, is placed on kiln cars and allowed to set in preheating area for several hours before being placed in a tunnel kiln for four to four and one-half days at 1850-2050 °F temperature for firing. The fired tile is allowed to cool, unloaded, manually knocked apart, inspected for shade and grade, and transported by forklift truck to the grinding area. The flat tile is manually placed on a conveyor belt where it is transported through a automatic grinder for sizing and finishing. The curved tile is manually fed into hand and corner grinder machines for sizing and finishing. The finished tile is inspected, sorted, packed, and stored or shipped by truck and rail to the consumer.

HEALTH AND SAFETY PROGRAM

The health and safety program is conducted by the plant safety committee and the Safety Coordinator who performs periodic inspections of the plant operations and holds monthly committee meetings. The Safety Coordinator does annual industrial hygiene silica sampling in the crushing area and operates a respirator fit test program. Annual physical examinations are performed on employees potentially-exposed to silica. The Division Industrial Hygienist conducts periodic training programs on noise for employees. The Company's Workers' Compensation insurance carrier, Kemper Insurance Company, conducted an industrial hygiene survey of the plant operations in 1979. The company has a 100 percent hearing conservation program, performing annual audios, on all employees. The personal protective equipment program includes the use of hard hats and dust masks in the crushing area and safety glasses and hearing protection in other designated areas.

CONTROLS

The company has installed local exhaust ventilation systems in the clay preparation and grinding areas that appear to be effective in protecting potentially-exposed employees. The personal protective equipment program appears to be effective for head, eye, ear and respiratory protection.

CONCLUSIONS/RECOMMENDATIONS

The American Olean Tile Company is recommended for an in-depth study of the local exhaust ventilation systems in the clay preparation and grinding areas.