

PRELIMINARY CONTROL TECHNOLOGY ASSESSMENT

OF

Crane Company
Ferguson, Kentucky

Survey Conducted by:
Frank W. Godbey

Report Written by:
Frank W. Godbey
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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: Crane Company
Ferguson, Kentucky

Date of Visit: September 24, 1982

Survey Team: Frank W. Godbey

Employer Representatives: Tom Anderson, Personnel Manager
Sam Haynes, Industrial Engineer

Employee Representative: Gary Jones
President of Local 334
International Brotherhood of Operative
Potters and Allied Workers

Standard Industrial
Classification (SIC CODE): 3261 - Vitreous China Plumbing Fixtures

Purpose of Survey: To perform a preliminary assessment of the
methods used in controlling potential health
hazards in the manufacture of vitreous china
plumbing fixtures and to determine the
advisability of conducting an indepth survey
of this plant.

INTRODUCTION

The manufacture of vitreous china plumbing fixtures (sinks, urinals, etc.) involves worker exposure to a variety of potentially harmful chemical and physical agents. Some of the agents of concern are: silica, glazes, temperature extremes, and noise. Our literature review and contacts with people in the vitreous china plumbing fixtures 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 vitreous china plumbing fixtures and to determine the advisability of conducting an indepth survey of this plant.

The primary contact was the company's Industrial Engineer, Sam Haynes. 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 vitreous china plumbing fixtures.

Plant Description

Crane Company produces vitreous china plumbing fixtures (sinks, urinals, etc.) from ball clays, flint, and feldspar. The Company employs 250 workers and operates one shift each day, five days a week. The plant area occupies about seven acres and consists of one brick and sheet metal office and manufacturing building containing approximately 300,000 square feet.

Process Description

North Carolina and Tennessee ball clays, flint and feldspar, ground to production specifications, are transported by truck and rail to the plant raw material storage area and dumped into one of thirteen storage bins (capacity of three railroad cars per bin). These raw materials are measured into front-end payloaders and dumped into a below-ground rotary mixer where they are blended with water to produce slip. The blended slip is pumped up to above-ground vibrating shaker screens where it is classified and allowed to flow by gravity to below-ground slip storage wells. The classified slip is pumped to above-ground air-pressurized holding tanks from which it flows to the casting bench. The slip is poured into plaster-of-paris molds where it is allowed to harden. The hardened cast is removed from the mold, scraped, and wet-sponged to produce a 24-hour finish. The finished cast is placed on a cart and manually transported to tunnel ovens where it is allowed to dry for 24 hours at 160-180°F temperature. The cast is removed from the oven, inspected, and

manually transported by cart to one of four spray booths for glaze spraying. Defective casts are scrapped or sent for rework (grinding, patching) before being sent to one of four rework spray booths for glaze spraying. The glazed cast is manually placed on kiln cars and transported by rail into a tunnel kiln where it is fired at 2300°F for 24 hours. The finished product is removed from the kiln, cooled, inspected, packed, and shipped by truck to the consumer. Defective products are scrapped or sent for rework (grinding, patching, glazing, firing) before being packed and shipped to the customer.

Health and Safety Program

The health and safety program is conducted by a union-management committee of two union and two management persons who perform monthly inspections of the plant operations and hold monthly meetings. The Corporate Director of Health and Safety conducts periodic health and safety training programs at the plant. The Company had an outside contractor perform industrial hygiene sampling of noise, dust and other atmospheric contaminants in December, 1981. The Company's Worker's Compensation Insurance Carrier, Insurance Company of North America, performs periodic health and safety inspections of the plant operations. The personal protective equipment program includes 100 per cent use of safety shoes throughout the plant and dust masks, safety glasses, and ear protection in designated area.

Controls

The Company has installed a local exhaust ventilation system at the glaze spraying and grinding operations that appears to be effective in protecting potentially exposed employees. The personal protective equipment program appears to be effective for foot, eye, ear, and respiratory protection.

Conclusions/Recommendations

The Crane Company is not recommended for an indepth study since they do not have operations (clay preparation) in which we are interested, or sufficiently unique health control technology.