PRELIMINARY SURVEY REPORT:

CONTROL TECHNOLOGY FOR MANUAL TRANSFER OF CHEMICAL POWDERS

AT

Hobart Corporation
Mt. Sterling, Kentucky

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

PLANT SURVEYED:	Hobart Corporation Mt. Sterling, Kentucky
SIC CODE:	3639
SURVEY DATE:	June 1, 1984
SURVEY CONDUCTED BY:	Frank W. Godbey
EMPLOYER REPRESENTATIVES CONTACTED:	James Carleton, Health and Safety Director, (513) 335-7171 Roger Reed, General Foreman Everett Scott, Plant Engineer Ed Beck, Process Control Supervisor
EMPLOYEE REPRESENTATIVES CONTACTED:	No Employee Representatives

I. INTRODUCTION

The National Institute for Occupational Safety and Health (NIOSH) is the primary Federal agency engaged in occupational safety and health research. Located in the Department of Health and Human Services (formerly DHEW), it was established by the Occupational Safety and Health Act of 1970. This legislation mandated NIOSH to conduct a number of research and education programs separate from the standard setting and enforcement functions carried out by the Occupational Safety and Health Administration (OSHA) in the Department of Labor. An important area of NIOSH research deals with methods for controlling occupational exposure to potential chemical and physical hazards. The Engineering Control Technology Branch (ECTB) of the Division of Physical Sciences and Engineering has been given the lead within NIOSH to study the engineering aspects of health hazard prevention and control.

Since 1976, ECTB has conducted a number of assessments of health hazard control technology on the basis of industry, common industrial process, or specific control techniques. Examples of these completed studies include the foundry industry; various chemical manufacturing or processing operations; spray painting; and the recirculation of exhaust air. The objective of each of these studies has been to document and evaluate effective control techniques for potential health hazards in the industry or process of interest, and to create a more general awareness of the need for or availability of an effective system of hazard control measures.

These studies involve a number of steps or phases. Initially, a series of walk-through surveys is conducted to select plants or processes with effective and potentially transferable control concepts or techniques. Next, in-depth surveys are conducted to determine both the control parameters and the effectiveness of these controls. The reports from these in-depth surveys are then used as a basis for preparing technical reports and journal articles on effective hazard control measures. Ultimately, the

information from these research activities builds the data base of publicly available information on hazard control techniques for use by health professionals who are responsible for preventing occupational illness and injury.

This plant was visited as part of a study of dust control during the manual handling of dry chemical powders and the manual transfer of those materials to some type of processing device, i.e., V-blender, Banbury mixer, etc. Ultimately, this project will result in a concise article describing dust control techniques during manual transfer of chemical powders.

II. PLANT AND PROCESS DESCRIPTION

PLANT DESCRIPTION

This facility consists of a modern brick, sheet metal, and concrete reinforced industrial building containing approximately 350,000 square feet of floor space and situated on 78 acres of land. The plant employs 750 workers and operates three shifts per day, five days a week, in the manufacture of dishwashers.

PROCESS DESCRIPTION

The dry materials are brought to the porcelain formulation area in bags and placed near the five transfer hoppers. The bags are opened and dumped in an opening in the ventilated hopper where the material flows by gravity to a ball mill on the floor below. In some cases, small amounts of dry material are scooped from the storage container, weighed, and added to the hopper. The materials are ground to production specifications in the ball mill and transferred to other production operations.

POTENTIAL HAZARDS

The major dry ingredients in the area of interest - porcelain formulation - are frit, silica, titanium dioxide, clay, sodium nitrite, potassium carbonate, and magnesium carbonate.

III. CONTROLS

PRINCIPLES OF CONTROL

Occupational exposures can be controlled by the application of a number of well-known principles, including engineering measures, work practices, personal protection, and monitoring. These principles may be applied at or near the hazard source, to the general workplace environment, or at the point of occupational exposure to individuals. Controls applied at the source of the hazard, including engineering measures (material substitution, process/equipment modification, isolation or automation, local ventilation) and work practices, are generally the preferred and most effective means of control both in terms of occupational and environmental concerns. Controls which may be applied to hazards that have escaped into the workplace environment include dilution ventilation, dust suppression, and housekeeping. Control measures may also be applied near individual workers, including the use of remote control rooms, isolation booths, supplied-air cabs, work practices, and personal protective equipment.

In general, a system comprised of the above control measures is required to provide worker protection under normal operating conditions as well as under conditions of process upset, failure and/or maintenance. Process and workplace monitoring devices, personal exposure monitoring, and medical monitoring are important mechanisms for providing feedback concerning effectiveness of the controls in use. Ongoing monitoring and maintenance of controls to insure proper use and operating conditions, and the education and commitment of both workers and management to occupational health are also important ingredients of a complete, effective, and durable control system.

These principles of control apply to all situations, but their optimum application varies from case-to-case. The application of these principles are discussed below.

This dishwasher manufacturer uses local and general exhaust ventilation in the porcelain formulation area to remove or dilute potential air contaminants generated during the operations. The ventilation systems design appears to be based on the American Conference of Governmental Industrial Hygienist's Ventilation Manual.

WORK PRACTICES

Workers are encouraged to use good work practices. They are provided instruction when they start the job and receive updates and reinforcement as needed. Health and safety educational materials and a union/management health and safety committee are provided to encourage a sustained good work practices effort.

MONITORING

Employees are given preemployment physicals and annual hearing tests and respiratory examinations. A stocked first-aid room is provided and employees are trained in first-aid. A local contract physician visits the plant periodically. A union/management health and safety committee holds monthly meetings and tours the plant reviewing health and safety conditions and practices. The corporate staff does periodic dust sampling.

PERSONAL PROTECTION

Safety glasses are provided and worn throughout the plant. Respirators, face shields, rubber aprons, ear protection, and gloves are provided "as needed" in specified areas.

IV. CONCLUSIONS AND RECOMMENDATIONS

This plant represents a general type of manual dry materials handling operation and does not have sufficiently unique controls to warrant performing an in-depth study. Therefore, an indepth survey is not recommended.